Santa Clara Valley Water District/
South County Regional Wastewater Authority

SOUTH COUNTY RECYCLED WATER MASTER PLAN

FINAL
October 2004

Santa Clara Valley Water District/
South County Regional Wastewater Authority

SOUTH COUNTY RECYCLED WATER MASTER PLAN

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EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

The Santa Clara Valley Water District (the District) and the South County Regional Wastewater Authority (SCRWA) intend to expand the use of recycled water to meet long-term water supply and wastewater needs in south Santa Clara County, specifically in and near the Cities of Gilroy and Morgan Hill. In order to facilitate the expansion of recycled water use in south Santa Clara County, the District and SCRWA have partnered to develop this Master Plan. SCRWA operates the South County Regional Wastewater Treatment Plant (WWTP) in the City of Gilroy. In 1999, the District, the City of Gilroy, the City of Morgan Hill, and SCRWA entered partnership agreements with SCRWA as the supplier, the District as wholesaler, and the Cities of Gilroy and Morgan Hill as retailers to develop a recycled water project.

The purpose of this study was to develop a Recycled Water Master Plan for the District and SCRWA to expand the use of tertiary treated recycled water within the study area. The projects identified in this Master Plan will increase the reliability of the County’s long-term water supplies. Increased recycled water usage will also lessen the demand on groundwater and provide SCRWA with additional discharge alternatives.

Existing SCRWA recycled water treatment facilities can produce 3 million gallons per day (mgd) of tertiary treated recycled water, and expansion to 6 mgd capacity is expected to be completed by the end of 2005. The existing recycled water distribution pipeline provides five existing customers with tertiary treated recycled water. Recycled water is used for landscape irrigation at Christmas Hill Park Ranch Addition, Christmas Hill Park, and the Eagle Ridge Development and Golf Course. Recycled water is used for agricultural irrigation on local farmland, including Obata Farms. The Calpine-Gilroy Energy Center Peaker Plant began utilization of recycled water for cooling in May 2004. Total existing annual average recycled water usage is approximately 711 acre-feet per year (afy).

The Master Plan defines immediate-term, short-term, and long-term capital improvement programs. The immediate-term plan defines projects that the District and SCRWA can implement within the next year to increase current recycled water use and reliability. The short-term plan includes projects that can be implemented in approximately the next five years. The long-term plan considers ultimate system build-out.

MARKET ASSESSMENT

The objective of this Master Plan is to maximize use of recycled water in South County to limit the use of potable water for uses in which recycled water is a reasonable alternative.

Overall, 70 potential recycled water customers were identified and quantified in both Gilroy and Morgan Hill, including commercial and industrial uses, landscape irrigation uses, and agricultural uses. In addition, the potential discharge pipeline to the Pajaro River was assessed as a long-term alternative to serve recycled water to additional agricultural customers south of the WWTP.

Current water usage data was available for most proposed recycled water sites. Historical irrigation water usage data was used to conservatively estimate expected annual average recycled water use for irrigation. Calculated irrigation requirements, based on local evapotranspiration and rainfall, were used to estimate irrigation use at sites for which data was not available. Calculated irrigation requirements were also used to estimate peak month demand, peak day demand, and peak hour demand for distribution system considerations. The calculated annual irrigation requirement in the South County area is approximately 3.8 feet/year.

If all quantified customers were supplied recycled water, peak monthly usage would exceed 9 mgd, which currently exceeds the WWTP's available influent flow and recycled water supply. Approximately 1 mgd of recycled water would be used during the period from November through March, assuming minimal wet season irrigation usage.

PROJECT ALTERNATIVES

Potential customers were grouped into 12 preliminary project alternatives. The groupings were developed based on customer location, information gathered in the market assessment, and in conjunction with planning level hydraulic modeling. The composition of each customer group also considered possible distribution system alignment, proximity to the existing distribution system, and other implementation factors. These groupings were used to develop peak flow demands, preliminarily route pipelines, perform a planning-level hydraulic analysis, and assess initial environmental constraints.

Preliminary pipeline alignments to serve new recycled water customers were developed and modified based on coordination with District staff, City staff, and logistical and environmental considerations. Pipeline routings were planned primarily within City roadways. Based on preliminary modeling results, expansion of the distribution pipeline network was shown to be necessary to serve additional customers. A parallel pipeline or development of an additional pipeline alignment will be necessary to serve as the backbone distribution system for the planned expansion. Three alternatives to provide recycled water in the Morgan Hill area were assessed, including a transmission pipeline from the WWTP and a membrane bioreactor scalping plant.

A Constraints Analysis was developed to identify and evaluate environmental constraints or "fatal flaws" that could affect implementation of each proposed pipeline route. Specific analysis topics included land use and land use policy, traffic and circulation, visual/aesthetic resources, biological resources, cultural resources, hazardous materials, hydrologic resources, and geology and soils. The conclusions of the Constraints Analysis were positive overall as to the environmental feasibility of the proposed pipeline routings. Overall, implementation of standard construction measures has the ability to reduce potential impacts associated with the proposed pipeline routes to “less than significant impacts”.

SELECTED PROJECTS

The 12 preliminary project alternatives were evaluated and screened based on peak flow demands, preliminary pipeline routes, cost effectiveness (i.e. cost/benefit ratio), initial hydraulic analysis, and initial environmental constraints. The goal of the evaluation was to optimize the projects for maximum recycled water usage at minimum cost. The evaluation further prioritized the projects, allowing development of immediate-term, short-term, and long-term capital improvement programs for the Master Plan. Projects were selected during a progress meeting with representatives of SCRWA, the District, and the City of Gilroy. The selection process emphasized cost effectiveness and recycled water demand, while minimizing necessary distribution system expansion.

Nineteen potential customers were selected as the basis for the capital improvement program (CIP) and have an estimated annual recycled water usage of 3,149 afy, more than quadruple the existing customers’ recycled water use of 711 afy. All information for analyzed projects not selected for implementation remains in the Master Plan for potential future use should conditions change.

CAPITAL IMPROVEMENT PROGRAM

The CIP for the South County Recycled Water Master Plan is planned to develop in three phases. Each customer grouping was added as a phased connection at a feasible future date. The estimated date of connection for each customer grouping is preliminary and may be changed due to implementation factors, environmental requirements, or other reasons.

The immediate-term CIP includes agricultural use that can be connected within the next year, along with a pipeline retrofit, storage reservoir, and pump station. The short-term plan includes landscape irrigation and industrial customers located near the existing pipeline that can be connected in the next five years, along with a new transmission pipeline, storage, and pump station upgrade. The long-term CIP includes additional landscape irrigation customers in the Gavilan College area and Hecker Pass area, as well as a booster pump station.

Table ES.1 summarizes the phases of the CIP, including flow demands and distribution system improvements.

Table ES.1 Capital Improvement Program - Recycled Water Demand and Distribution System Improvements
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Capital Improvement Program Phase	Maximum Month Demand (mgd)	Maximum Day Demand (mgd)	Distribution System Improvements
Existing	1.8	2.3	-
Immediate-Term (One year)	3.7	4.8	3,000 feet of 12-inch diameter pipeline, retrofit existing Hecker Pass pipeline, 3-MG storage reservoir, 3-mgd on-site WWTP pump station
Short-Term (Next five years)	5.6	7.4	16,000 feet of 16-inch diameter pipeline, 24,000 feet of 30-inch diameter pipeline, 3-MG storage reservoir, 6-mgd on-site WWTP pump station
Long-Term (Beyond five years)	7.1	9.3	14,000 feet of 16-inch diameter pipeline, 2-mgd booster pump station expansion

COST ESTIMATES

Planning level project costs were developed and include estimated costs of construction, engineering design, construction management and inspection, and contingencies for estimating and construction, where applicable. An annual cost of delivered recycled water was estimated based on project costs and O&M costs.

The annual costs are summarized in Table ES.2. Each phase of the CIP includes incremental project costs and incremental O&M costs that allow the calculation of the cost per additional acre-foot of recycled water use in each phase. The cost to serve all selected customers in the entire CIP is the sum of the incremental costs for each phase. The implementation of all projects selected for the CIP will result in a maximum month recycled water demand of 7.1 mgd at an estimated project cost of $28,000,000 and annual O&M costs of $162,000. At an estimated ultimate annual recycled water usage of 3,149 afy, the cost of recycled water distribution for the selected CIP is $580 per acre-foot delivered.

Table ES.2 Annual Capital Improvement Program Cost Summary
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

ENRCCI (SF) **May 2004 = 8107**	**Capital Improvement Program Phase**			
Description	**Existing System**	**Immediate-Term**	**Short-Term**[1]	**Long-Term**[1]
Project Costs (Present Worth)	-	$4,700,000	$17,400,000	$5,900,000
Convert to Annual Basis	5.5% interest over 50 years = 0.0591			
Annual Project Costs	-	$278,000	$1,028,000	$349,000
Incremental O&M Costs	$46,000	$12,000	$74,000	$30,000
Incremental Annual Cost	$46,000	$290,000	$1,102,000	$379,000
Total Annual Flow (AFY)	711	1,566	2,501	3,149
Incremental Flow (AFY)	-	855	935	648
Cost per additional Acre-foot, Annually	**-**	**$340**	**$1,180**	**$580**
Cost per Annual Acre-foot, Entire Proposed CIP	**$580**			

Notes:
(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.
(2) For the purposes of this cost estimate, inflation and discount rate for annualized costs are assumed equal, offsetting cost impacts over the phased construction schedule.

CONCLUSIONS

When considering the implementation of any recycled water project, other factors beyond economics must be reviewed. Other implementation factors for this Master Plan include possible City recycled water ordinances, coordination with customers regarding timing of construction, retrofit requirements, determination of “who pays” for customer improvements, development of specific customer agreements, land acquisition, and coordination with the residential project developers regarding recycled water usage and pipeline alignments.

The implementation of this Master Plan will include design of proposed distribution facilities, additional environmental services for CEQA documentation, and construction of the proposed facilities. Potential identification and implementation of other feasible projects may deviate from the projects, phasing, and schedule identified in this Master Plan.

Chapter 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The Santa Clara Valley Water District (SCVWD, the District) and the South County Regional Wastewater Authority (SCRWA) intend to expand the use of recycled water in South Santa Clara County, specifically in and near the Cities of Gilroy and Morgan Hill. The District Board has adopted the following water recycling Ends Policies:

2.1.6 Water recycling is expanded in Santa Clara County in partnership with the community, consistent with the District's Integrated Water Resources Plan (IWRP), reflecting its comparative cost assessments and other Board Policies.

  2.1.6.1 Target 2010, water recycling accounts for five percent of the total water use in Santa Clara County.

  2.1.6.2 Target 2020, water recycling accounts for ten percent of the total water use in Santa Clara County.

Additionally, the District's intent to increase recycled water use throughout Santa Clara County is discussed in District policy documents, including the Urban Water Management Plan, Integrated Water Resources Plan, and Groundwater Management Plan.

In order to facilitate the expansion of recycled water use in South Santa Clara County, the District and SCRWA have partnered. SCRWA operates the South County Regional Wastewater Treatment Plant (WWTP) in the City of Gilroy. In 1999, the District, the City of Gilroy, the City of Morgan Hill, and SCRWA entered partnership agreements with SCRWA as the supplier, the District as wholesaler, and the Cities of Gilroy and Morgan Hill as retailers to develop a recycled water project. One of the elements of the agreements is the preparation of a Master Plan for additional recycled water projects. This report represents the agreed upon Master Plan.

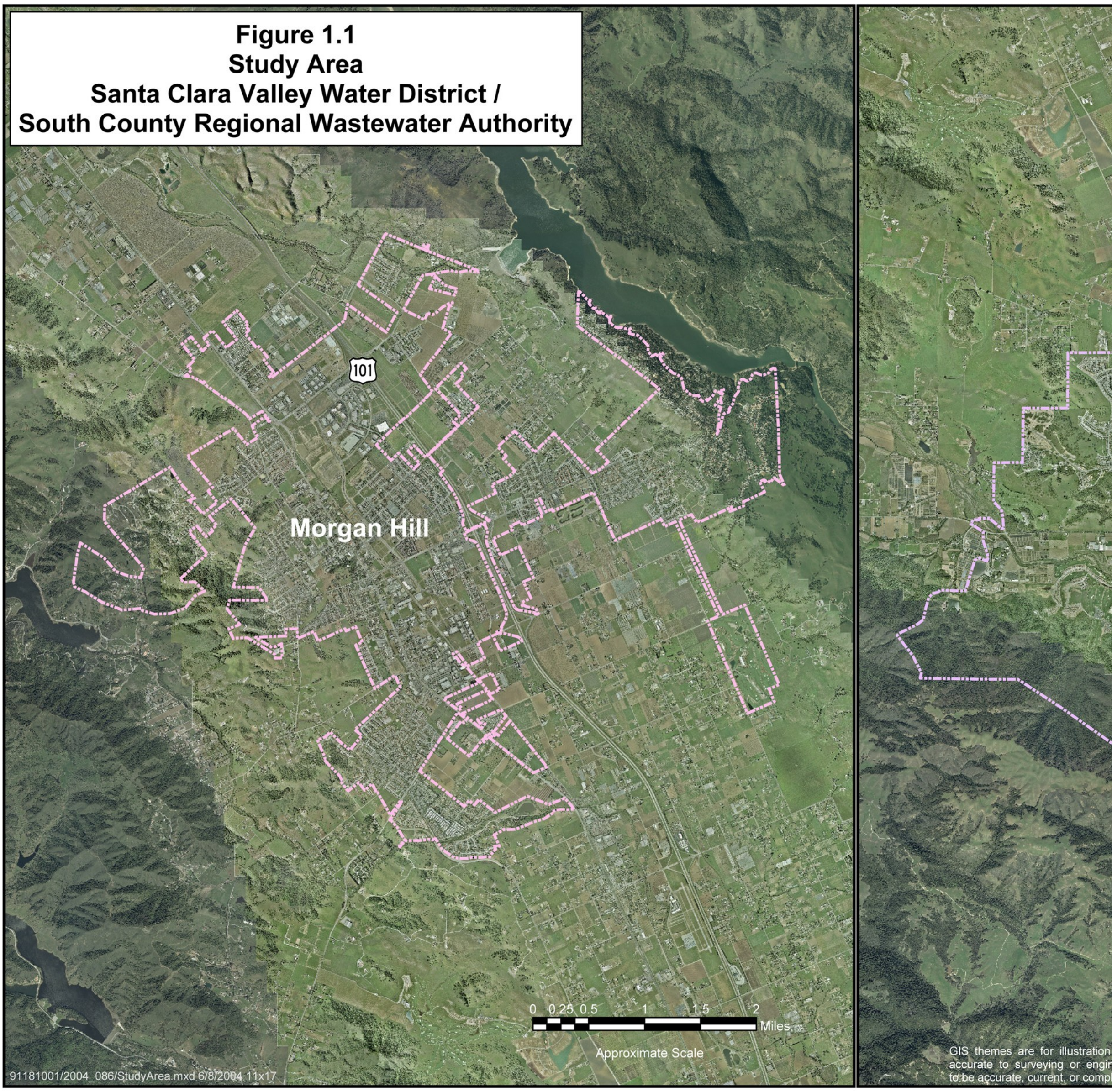
1.1.1 Study Area

The study area for the South County Recycled Water Master Plan is the City of Gilroy, as well as several identified projects in the City of Morgan Hill. The study area is depicted in Figure 1.1. The area is bounded by agricultural fields to the North, East, and South and by hillsides to the West.

1.2 PURPOSE OF STUDY

The purpose of this study is to develop a Recycled Water Master Plan for the District and SCRWA to expand the use of tertiary treated recycled water within the study area.

Figure 1.1
Study Area
Santa Clara Valley Water District /
South County Regional Wastewater Authority


101
Morgan Hill
0 0.25 0.5 1 1.5 2
Miles
Approximate Scale
91181001/2004_086/StudyArea.mxd 6/8/2004 11x17
GIS themes are for illustration
accurate to surveying or engin
to be accurate, current, or compl

The projects identified in the Master Plan will increase the reliability of the County's long-term water supplies. Increased recycled water usage will also lessen the demand on groundwater.

The Master Plan identifies, quantifies, and evaluates potential recycled water customers. For the immediate-term (within the next year), the Master Plan evaluates customers and alternatives with immediate increase in recycled water demand. For the short-term (within 5 years), the Master Plan evaluates projects that can be feasibly implemented within that timeline to increase recycled water demand. For the long-term (greater than 5 years), the Master Plan identifies market demands, performs planning studies, and recommends long-term improvement projects in conjunction with SCRWA build-out plans and the County's General Plan.

The Master Plan identifies capital improvement projects needed to improve the recycled water distribution system's reliability and capacity to accommodate future expansion. The ultimate goal is to recycle as much of the discharge from the SCRWA WWTP as possible. It is not within the limits of this study to include needed upgrades at the WWTP to provide for full tertiary treatment.

The Master Plan presents a strategy for expanding use of recycled water in South Santa Clara County over a 20-year planning horizon. A Programmatic Environmental Impact Report (EIR) will identify and evaluate alternatives and will address implementation of the plan. The California Environmental Quality Act (CEQA) compliance process will involve collecting and analyzing relevant environmental data, inviting public participation in the development and evaluation of project alternatives, developing alternatives that will avoid and minimize environmental impacts to the greatest extent practicable, and mitigating impacts that cannot be minimized or avoided, but which are supported by legally supportable overriding considerations.

1.3 BACKGROUND

1.3.1 Background Reports

Several existing reports and studies were reviewed to provide general background information for development of this report. These reports are used throughout the Master Plan as reference materials and to insure consistency with other District and SCRWA reports and documents.

The reports reviewed and referenced in this Master Plan are summarized in Table 1.1, including title, date, and author.

The Gilroy General Plan, SCRWA Water Reclamation Planning Study, SCVWD Water Usage Data, and City of Gilroy Water Usage Data supplied information on potential

Table 1.1 Summary of Existing Reports and References
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Title/Description	Date	Author
Gilroy 2002-2020 General Plan	June 2002	City of Gilroy
SCRWA 2000 Annual Recycled Water Report	January 2001	OMI
SCRWA 2001 Annual Recycled Water Report	January 2002	OMI
SCRWA 2002 Annual Recycled Water Report	January 2003	OMI
Waste Discharge Requirements for SCRWA	May 1999	RWQCB
Water Reclamation Requirements for SCRWA (Recycled Water Permit)	May 1998	RWQCB
SCVWD Groundwater Management Plan	July 2001	SCVWD
SCRWA 2001 Annual Treatment Plant Report	January 2002	OMI
SCRWA 2002 Annual Treatment Plant Report	January 2003	OMI
SCRWA Water Reclamation Planning Study	February 1995	Montgomery Watson
SCVWD Urban Water Management Plan	April 2001	SCVWD
Advanced Recycled Water Treatment Feasibility Study (Draft)	Currently being revised	SCVWD, Black & Veatch
SCVWD Water Usage Data and Information	2000-2002	SCVWD
City of Gilroy Water Usage Data	2003	City of Gilroy
Recycled Water Monitoring Data	2000-2003	SCVWD
SCRWA Recycled Water Booster Pump Station and Reservoir - Initial Study/Draft Mitigated Negative Declaration	May 2000	ESA
SCVWD Water Use Efficiency Program Annual Report	2001-2002	SCVWD
SCRWA WWTP Effluent Disposal Capacity Analysis - Annual Update 2001	2001	Montgomery Watson Harza

customers of recycled water and other background information. The SCRWA Annual Reports, Waste Discharge Requirements, Water Reclamation Requirements, Recycled Water Monitoring Data, SCRWA Recycled Water Booster Pump Station and Reservoir - Initial Study/Draft Mitigated Negative Declaration, and SCRWA WWTP Effluent Disposal Capacity Analysis supplied information on the existing recycled water customers, existing recycled water facilities, and other background information. The SCVWD Groundwater Management Plan, SCVWD Urban Water Management Plan, Advanced Recycled Water Treatment Feasibility Study, and SCVWD Water Use Efficiency Program Annual Report supplied information on District policies and plans and other background information.

1.3.2 Existing Water Purveyors

SCVWD acts as the water wholesaler and manages the groundwater basin in South County. The Cities of Gilroy and Morgan Hill serve as the water retailers, providing water directly to customers. Gilroy derives its municipal supply from eight groundwater production wells and Morgan Hill derives its municipal supply from 13 groundwater production wells. The municipal supply is treated with chlorine disinfection, and meets all current regulations. Private groundwater wells are also in use for water supply in the South County area.

Recycled water partnership agreements were signed in 1999, designating SCRWA as the producer, the District as the wholesaler, and the Cities of Gilroy and Morgan Hill as the retailers of recycled water. Currently in South County, recycled water is only delivered in the Gilroy area.

1.3.3 Existing Wastewater Treatment

SCRWA treats wastewater from Gilroy and Morgan Hill. SCRWA owns and operates the existing WWTP, located along Southside Drive approximately 2 miles southeast of Gilroy. The WWTP can treat an average dry weather flow (ADWF) of up to 7.5 million gallons per day (mgd) to secondary treatment standards. The treatment process consists of influent screening, aerated grit removal, nitrification, denitrification, oxidation ditches, and secondary clarification. The current ADWF is approximately 6 mgd. Figure 1.2 depicts the average monthly influent flows for 2001-2002.

In July 2003, average diurnal flow range at the WWTP ranged from a low of approximately 2.8 mgd in early morning to a peak of 8 mgd in early afternoon. Average daily flow during this period was 6 mgd. Figure 1.3 depicts the average diurnal flow variation, based on data from SCRWA during the month of July 2003.

The WWTP can divert up to 3 mgd of secondary effluent to a tertiary treatment process that meets the recycled water criteria of California’s Title 22 unrestricted use classification. The tertiary treatment process consists of coagulation, filtration with sand filters, chlorination, and dechlorination. By the end of 2005, SCRWA will expand recycled water tertiary treatment system capacity to produce 6 mgd. SCRWA intends to continue expanding tertiary treatment facilities as demand for recycled water increases.

1.3.4 Existing Recycled Water Use

In 1977, the District, the City of Gilroy, and the Gavilan Water Conservation District, which merged with SCVWD in 1989, began a partnership to construct and operate a recycled water system extending from the SCRWA WWTP to several customers along Hecker Pass Highway. Initially, this system delivered primary treated recycled water. Due to the low quality of the water and several recurring operational problems, the system operated sporadically over the next 20 years.

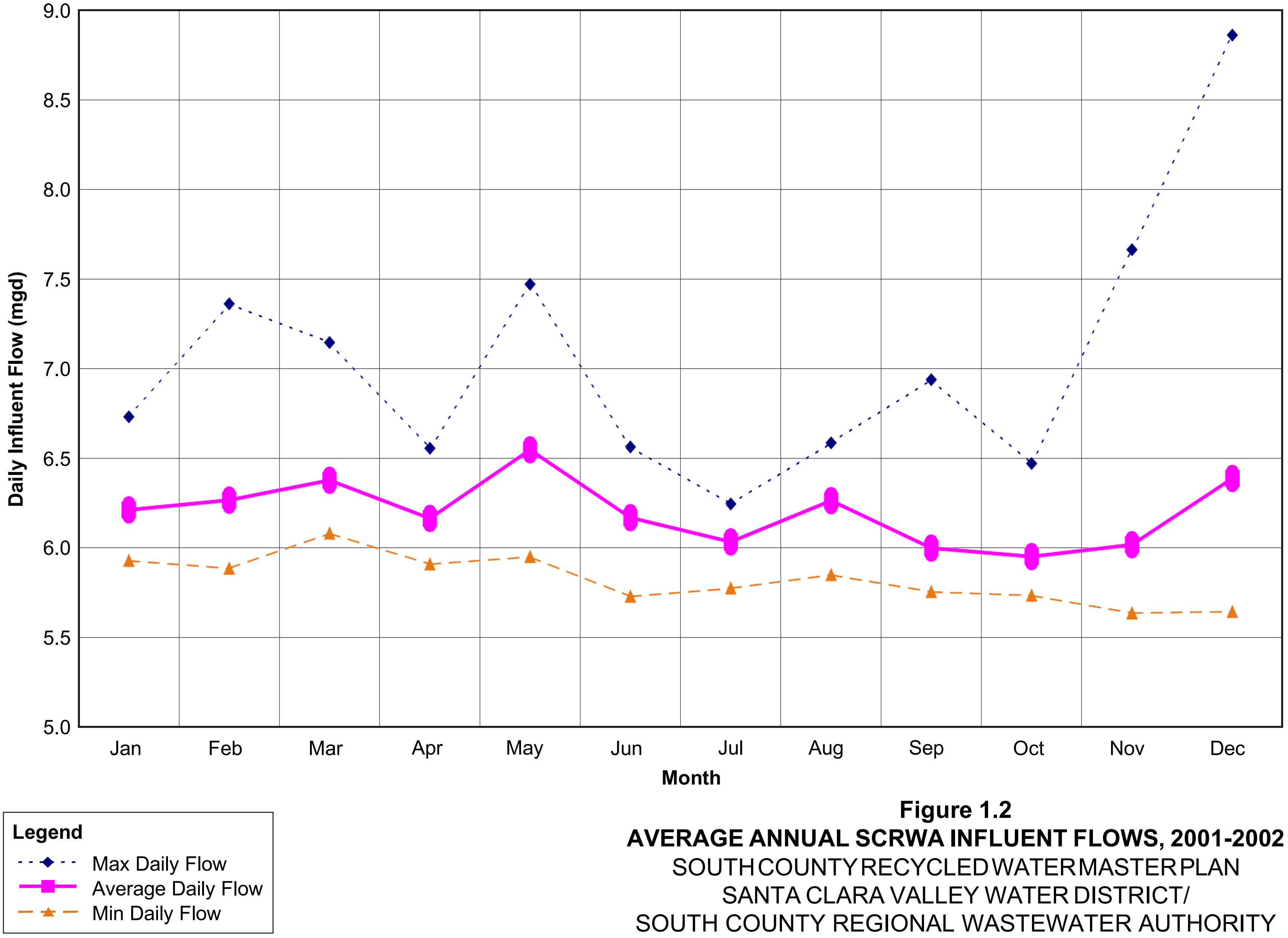


Figure 1.2

AVERAGE ANNUAL SCRWA INFLUENT FLOWS, 2001-2002

SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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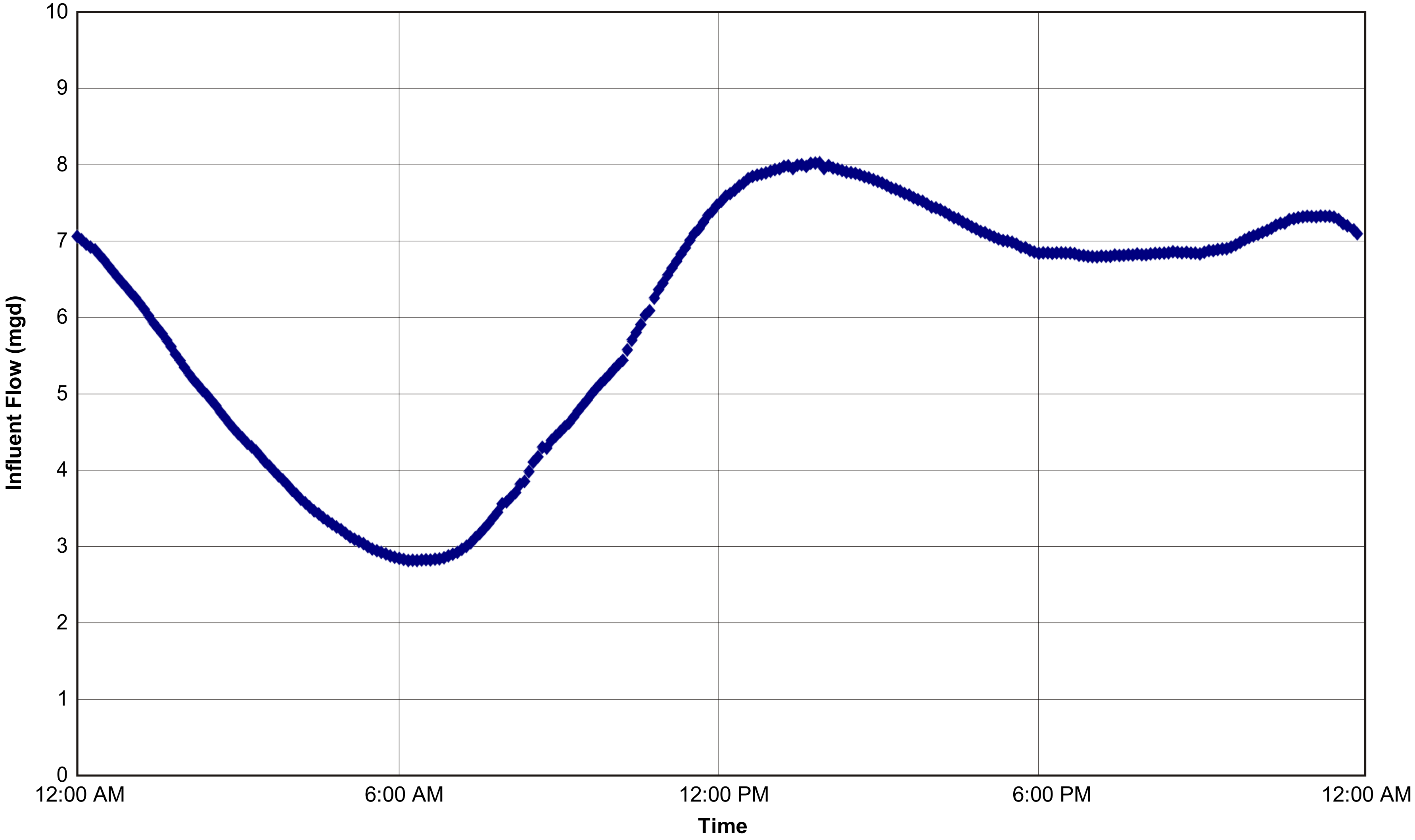


Figure 1.3
SCRWA DIURNAL FLOW VARIATION, JULY 2003
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

In 1999, the District, the City of Gilroy, the City of Morgan Hill, and SCRWA entered partnership agreements with SCRWA as the supplier, the District as wholesaler, and the Cities of Gilroy and of Morgan Hill as retailers to develop a recycled water project. The project included rehabilitation of the existing pipeline, additional pipeline construction, pump stations, and a closed tank reservoir. Future expansions of the treatment plant and distribution system are planned and will be the focus of this Master Plan.

The existing recycled water distribution pipeline provides five existing customers with tertiary treated recycled water. Recycled water is used for landscape irrigation at Christmas Hill Park Ranch Addition, Christmas Hill Park (expanded use beginning in 2003), and the Eagle Ridge Development and Golf Course. Recycled water is used for agricultural irrigation on local farmland, including Obata Farms. The Calpine-Gilroy Energy Center Peaker Plant began utilization of recycled water for cooling in May 2004.

Figure 1.4 depicts the locations of the existing recycled water customers.

The Christmas Hill Park Ranch Addition and Eagle Ridge Development and Golf Course have annual average recycled water usages of 17 acre-feet per year (afy) and 561 afy, respectively. Expanded recycled water use at Christmas Hill Park began in 2003, with an expected annual average demand of 30 afy. Existing agricultural usage at nearby Obata Farms has an annual average recycled water usage of 58 afy, with the potential to increase usage. Expected average demand at the Calpine-Gilroy Energy Center Peaker Plant is 45 afy. Total existing annual average recycled water usage for all five customers is approximately 711 afy.

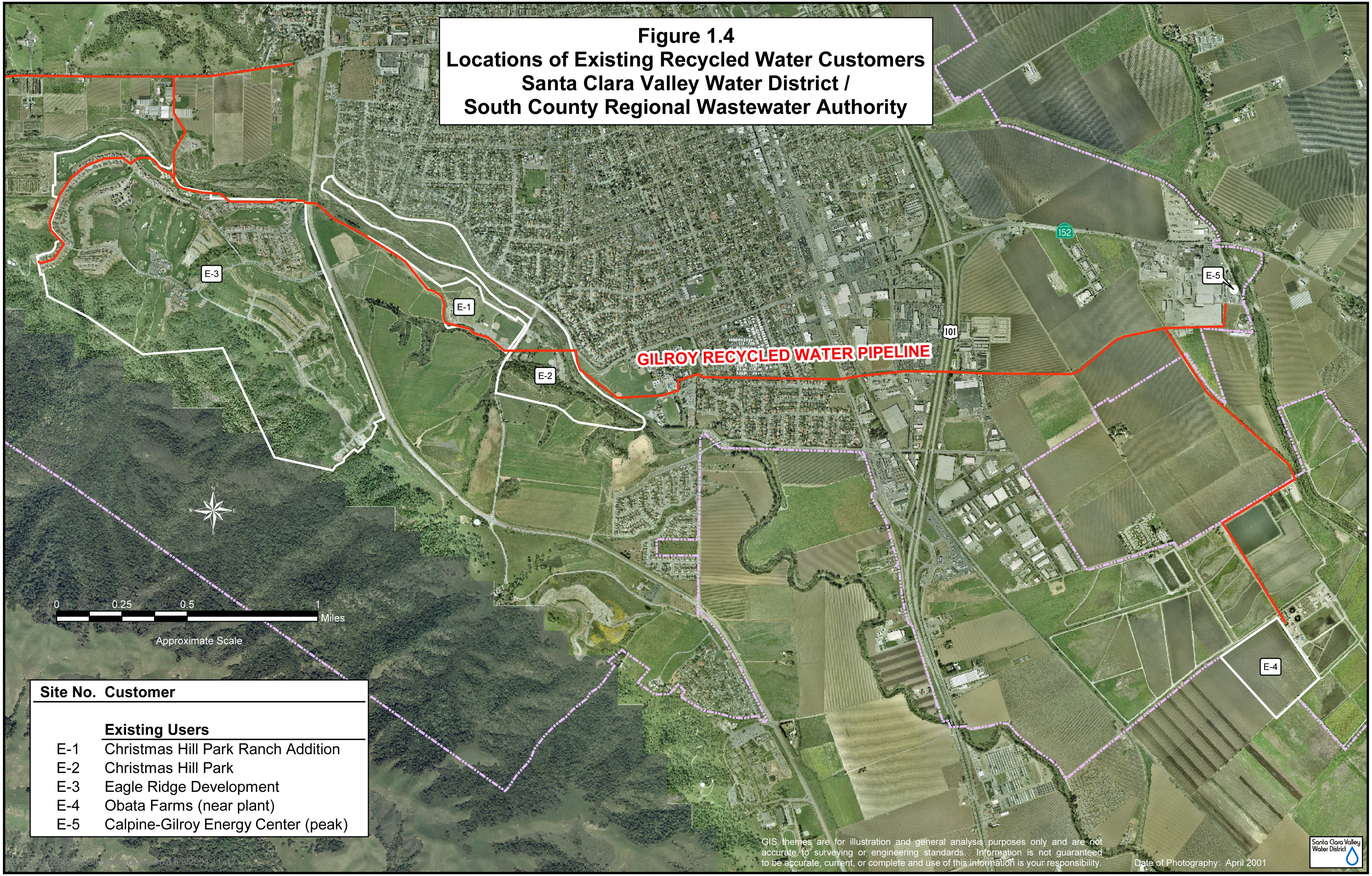
Table 1.2 summarizes information for these existing customers, including location, type of use, average annual recycled water demand, and estimated maximum month recycled water demand.

Seasonal variation in existing recycled water flows during the period from 2000-2003 is summarized in Figure 1.5. As shown in the figure, recycled water use has been very consistent over the past four years. Historical recycled water usage peaks in the month of July at a flowrate of approximately 1.2 mgd. These values do not include additional existing demand from the recent expansion of recycled water usage at Christmas Hill Park and the Calpine-Gilroy Energy Center Peaker Plant. Estimated maximum month recycled water demand including all five existing customers is approximately 1.8 mgd.

1.3.5 Recycled Water Regulations

The use of recycled water is regulated by several state agencies in California, primarily the Department of Health Services (DHS), the State Water Resources Control Board (SWRCB), and Regional Water Quality Control Boards (RWQCB).

Figure 1.4
Locations of Existing Recycled Water Customers
Santa Clara Valley Water District /
South County Regional Wastewater Authority


GILROY RECYCLED WATER PIPELINE
E-1
E-2
E-3
E-4
E-5
152
101
N
E
S
W
0
0.25
0.5
1
Miles
Approximate Scale
Santa Clara Valley Water District

Site No.	Customer
	Existing Users
E-1	Christmas Hill Park Ranch Addition
E-2	Christmas Hill Park
E-3	Eagle Ridge Development
E-4	Obata Farms (near plant)
E-5	Calpine-Gilroy Energy Center (peak)

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Date of Photography: April 2001

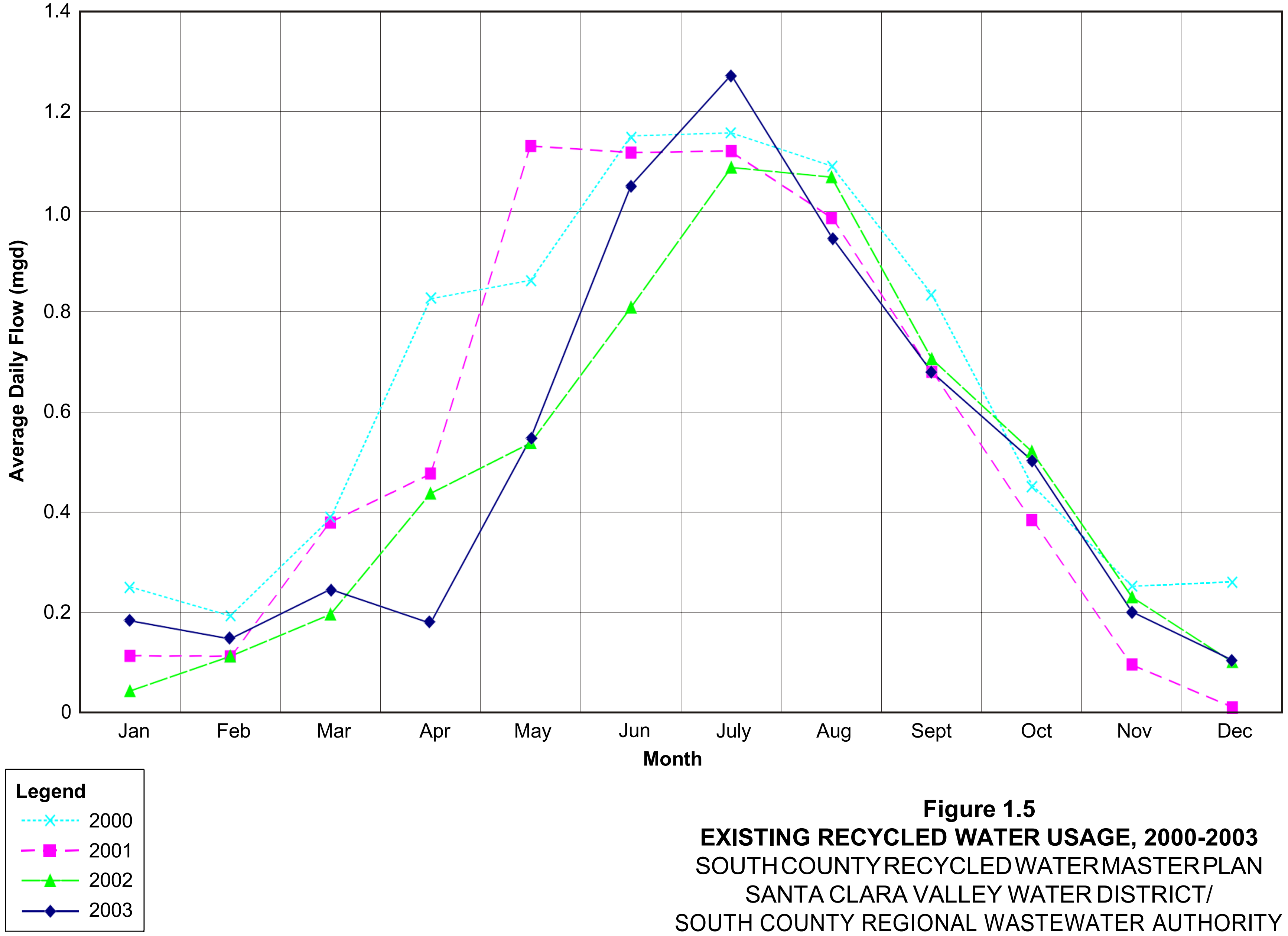


Figure 1.5

EXISTING RECYCLED WATER USAGE, 2000-2003

SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

scv604f3-6775.cdr

Table 1.2 Existing Recycled Water Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Site No.	Customer	Location	Type of Use	Area (acres)	Average Demand (afy)(1)	Max Month Demand (mgd)(2)
E-1	Christmas Hill Park	Ranch Addition	Irrigation	(6)	17	0.04
E-2	Christmas Hill Park	Main Park	Irrigation (new 2003)	8	30(3)	0.07
E-3	Eagle Ridge Development	Santa Teresa	Golf course, irrigation	(6)	561	1.22
E-4	Obata Farms	Near WWTP	Agricultural irrigation	30(4)	58	0.13
E-5	Calpine-Gilroy Energy Center (Peaker Plant)	Pacheco Pass	Cooling water	N/A	45(5)	0.36(5)
Total					**711**	**1.8**

Notes:

(1) Annual average recycled water demand, acre-feet per year (afy).
(2) Maximum month demand, million gallons per day (mgd).
(3) Estimated demand based on 3.8 feet per year of expected irrigation.
(4) Currently irrigated acres. Potential exists to increase recycled water usage.
(5) Calpine maximum month, peak day, and peak hour factors based on water usage calculations by Calpine provided by SCVWD.
(6) Christmas Hill Park Ranch Addition and Eagle Ridge Development recycled water demands based on historic demands, not irrigable area.

The Central Coast Region RWQCB has issued Master Water Reclamation Requirements Order No. 98-052 to regulate recycled water production at the SCRWA WWTP and specific use requirements. Order No. 98-052 requires SCRWA to submit annual self-monitoring reports to the RWQCB, including water quality monitoring, user inspections, and any violations and corrective actions taken.

The general DHS recycled water regulations, which designate wastewater treatment processes, effluent quality, and uses of recycled water, are contained in the California Code of Regulations, Title 22, Division 4, Chapter 3, Sections 60301 through 60355. Additional California regulations for recycled water are contained in the Health and Safety Code, the Water Code, and Title 17 of the California Code of Regulations. The most recent revision to California recycled water regulations came into effect in 2001. The recent revisions "update the regulations to reflect expansion in the use of recycled water, studies on its technical and health effects and advances in treatment technology. This action expands the range of allowable uses of recycled water by repealing obsolete regulations and adopting regulations establishing criteria for new allowable uses and requirements for specific uses, such as irrigation, impoundments and cooling. In addition, this action adopts requirements governing dual-plumbed recycled water systems and updates provisions governing back-flow prevention devices for consistency with these requirements. Finally, this action updates the sampling and analysis standards for clarity."

A compilation of California regulations regarding recycled water, known as "The Purple Book," is attached in Appendix A, or can be found online at http://www.dhs.ca.gov/ps/ddwem/ under Water Recycling.

1.3.6 Potential Future Regulatory Issues

Recently, some concerns have arisen regarding the use of recycled water containing endocrine disrupting compounds (EDCs), pharmaceutically active compounds, and other constituents of concern. No current regulations are in effect regarding EDCs in recycled water. However, the DHS issued Draft Groundwater Recharge Reuse Regulations in July 2003, which contain monitoring requirements for a list of EDCs, including hormones, industrial compounds, and pharmaceuticals. The Draft Groundwater Recharge Reuse Regulations do not apply to this Master Plan, which focuses solely on non-potable applications. It appears prudent to evaluate the potential for, and if necessary, manage groundwater threats associated with increases in the use of recycled water. In the long-term, it will be important to track research and regulations related to the use of recycled water, particularly as related to these concerns.

Chapter 2

MARKET ASSESSMENT

2.1 OBJECTIVES AND SCREENING CRITERIA

2.1.1 Project Objectives

The objective of preparing this Master Plan is to maximize use of recycled water in South County and limit use of potable water for uses in which recycled water is a reasonable alternative. California Water Code, Division 7, Chapter 7, Article 7, Section 13550 states "that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses is a waste or an unreasonable use of the water…if recycled water is available." SCRWA's wastewater disposal issues and limited potable water supply reinforce this objective.

The Master Plan defines immediate-term, short-term, and long-term plans for recycled water system expansion. The immediate-term plan defines immediate projects that the District and SCRWA can implement to increase current recycled water use. The short-term plan includes projects that can be implemented in approximately the next five years. The long-term plan considers ultimate system build-out, given the potential for interconnection of future recycled water distribution throughout Santa Clara County.

A further objective is diversified recycled water usage, potentially including commercial, industrial, irrigation, and agricultural customers. In order to maximize the use of recycled water throughout the year, year-round uses were given higher priority than seasonal irrigation uses.

2.1.2 Screening Criteria

The purpose of screening criteria is to aid in determining the most viable recycled water alternative to implement. The development of screening criteria for this project was a collaborative process between Carollo Engineers (Carollo), SCRWA, and District staff. At the initial project progress meeting in August 2003, it was decided to utilize a two-stage screening process to evaluate alternatives. The first stage allowed an initial "big picture" view while the second stage focused on the details of implementation feasibility.

Numerous screening criteria were considered and discussed. The collaborative process determined the applicable screening criteria for the Stage I Screening, including:

- Year-round versus seasonal use,
- Proximity to existing system,
- Use quantity,
- Implementation factors, and
- Preliminary environmental factors.

Definitions and explanations of these screening criteria are as follows:

- Year-round versus seasonal use: Year-round recycled water use is favored over seasonal use, as most irrigation occurs only during dry summer periods. Winter use helps the WWTP reduce effluent discharge during peak flow months.
- Proximity to existing system: Increased distance from the existing recycled water pipeline is directly correlated to cost and also increases the total length of the distribution system, leading to increased maintenance requirements.
- Use quantity: Potential customers with a greater quantity of recycled water usage are favored because of the economies of scale.
- Implementation factors: Implementation factors could include issues such as the following: presence of separate on-site irrigation and potable systems, need for extensive or minimal retrofits, constructability, accessibility, required storage capacity, or other relevant factors.
- Preliminary environmental factors: Environmental factors preliminarily assessed in this screening include the following: potential pipeline routing (i.e., through an undeveloped area vs. previously disturbed right-of-way), the potential for impact to endangered species, and other potential long-term environmental impacts. Environmental factors may have substantial influence over project costs.

The Stage I screening process carried forward currently viable recycled water alternatives. It should be noted that although some alternatives were not carried forward after Stage I screening, they were not eliminated from consideration. At some future date, these alternatives may be recognized as more viable based upon future conditions.

Stage II screening further identified the most viable alternatives based on distribution system alignment, flow demands, cost effectiveness, and specific environmental issues.

2.1 MARKET IDENTIFICATION

Over 70 potential recycled water customers within the study area were identified during the Stage I screening process. Categories established for potential recycled water customers include commercial and industrial users, landscape irrigation users, and agricultural users. The District is investigating the potential for groundwater recharge and stream-flow augmentation uses of recycled water in separate studies, which are not part of this Master Plan.

Summary tables for each category of customers are included in Section 2.3, Market Quantification. Numerous potential recycled water customers were contacted and interviewed regarding their estimated demand for recycled water. Customers were questioned as to their irrigable acreage (if applicable), current and potential water use, potential implementation factors, and concerns regarding the quality and usage of recycled water.

Customers contacted at this stage included the Gavilan College complex, Gilroy Golf Course, Caltrans, Inland Paperboard and Packaging, Cintas Corporation, Gavilan Hills Memorial Park and Saint Mary's Cemetery, Obata Farms, the City of Gilroy Parks and Recreation Department, and the City of Gilroy Planning Department. The District contacted Bonfante Gardens and Goldsmith Seeds separately. A summary of contact information relayed by potential customers is contained in Appendix B.

2.2.1 Potential Commercial and Industrial Customers

Potential commercial and industrial customers were identified based on water usage data from the City of Gilroy. Inland Paperboard and Packaging, Cintas Corporation, and Calpine Gilroy Power Plant are the only large commercial or industrial users with consistent monthly flowrates above 200,000 gallons per month. Inland Paperboard and Packaging manufactures paper products such as corrugated cardboard. Russ Asp, plant manager for Inland, indicated potential interest in using recycled water at the plant. Cintas Corporation operates a large commercial laundry for cleaning uniforms and linens. Franz Lubick, plant manager for Cintas, indicated that they are very interested in using recycled water in the laundry operation, given the potential economic savings.

Calpine-Gilroy Energy Center Peaker Plant is an existing recycled water customer. A second, adjacent power plant is the Calpine Gilroy Power Plant, a cogeneration facility. Some of the Calpine Gilroy Power Plant's cooling water is utilized to produce steam for the adjacent Gilroy Foods processing center. However, cooling tower blowdown water is not suitable for producing steam, and Calpine has approached SCRWA about the potential to use up to 1 million gallons per day (mgd) of recycled water for cooling tower blowdown. Supplying some recycled water for cooling tower blowdown appears feasible. Testing conducted in the summer of 2004 showed that Calpine Gilroy Power Plant is a viable customer.

Additional commercial uses of recycled water include car washes, construction, vehicle washdown, and toilet/urinal flushing, among many others. No potential customers with these potential uses were identified. As the use of recycled water gains acceptance in the community, these uses could potentially be added as future recycled water customers.

2.2.2 Potential Irrigation Customers

Eight potential large landscape irrigation customers were identified through water use records, land use maps, and consultation with District staff. Large landscape irrigation users are defined as having a total irrigable area greater than 30 acres, or potential for future expansion. These include Gavilan College, Gavilan Sports Park, Gavilan Golf Course, Bonfante Gardens, Gilroy Golf Course, the Gilroy Sports Park, Goldsmith Seeds, and Gilroy High School. The Gilroy Sports Park is a staged project that is not yet constructed, which is designed to irrigate with recycled water from a future distribution pipeline.

Numerous small (less than 30 acres) landscape irrigation customers in the Gilroy area were also identified through water use records, the Gilroy General Plan, road and land use maps, and site visits. Small landscape irrigation users include new residential developments, parks, cemeteries, medians and interchanges, and school yards. Several future planned sites were also identified based on the Gilroy General Plan and the City of Gilroy Parks & Recreation System Master Plan. Sites with an irrigable area less than one acre were not identified but can easily be included if they are on the preferred pipeline alignment.

2.2.3 Potential Agricultural Customers

Based on the direction of the District, the only agricultural customer considered was a farmland adjacent to the SCRWA facility, currently leased to Obata Farms. Obata Farms currently uses recycled water and has requested substantially more. Other agricultural users could be later considered as potential recycled water customers if they are along the preferred pipeline alignment. Local farmland surrounding the SCRWA WWTP includes a total of approximately 225 irrigated acres, in addition to the 35 acres currently irrigated with

SCRWA is planning the future installation of a wet weather discharge pipeline south from the WWTP to the Pajaro River. This future pipeline could serve a dual use, and also provide recycled water for irrigation to several agricultural customers in the area south of the WWTP. Some agricultural users require higher quality recycled water along with irrigation management practices to protect salt sensitive crops. The District has undertaken studies to evaluate appropriate water quality and practices to protect such crops. SCRWA and the District have contacted other potential agricultural customers, but at this time no other customers are included in the Master Plan.

2.2.4 Potential Morgan Hill Customers

Numerous potential recycled water customers in the Morgan Hill area were identified in the previous 1995 Master Plan. Twenty identified central downtown Morgan Hill customers include landscape irrigation at five parks, three government facilities including the Civic Center, Police Department, and a museum, street medians, and seven Morgan Hill School District schools. These customers could be served through an extension of the distribution system north along Monterey Road. For clarity, downtown Morgan Hill customers are referred to collectively on occasion in this Master Plan.

A separate potential project in Morgan Hill involves irrigation of the American Institute of Mathematics Golf Course. This private golf course, located near the intersection of Maple Avenue and Foothill Avenue, could be irrigated with recycled water provided by a small scalping plant located nearby. To serve other Morgan Hill customers, a pipeline could be routed north from Gilroy parallel to the existing wastewater collection pipelines.

The locations of all potential customers in Gilroy are shown in Figure 2.1A. The locations of all potential customers in Morgan Hill are shown in Figure 2.1B. Each potential customer was assigned a random number for identification purposes.

2.2.5 Other Potential Recycled Water Uses

The District is investigating the potential for groundwater recharge and stream-flow augmentation uses of recycled water in separate studies, which are not part of this Master Plan. Future recycled water uses could also include residential irrigation, street cleaning, and other allowable nonpotable uses. Proposed residential developments and planned future parks are among other future uses of recycled water in the South County area.

2.3 MARKET QUANTIFICATION

Each potential customer identified was then quantified as to potential recycled water use. Current water usage data were available for most proposed recycled water sites. The District provided groundwater usage data for large customers relying on private wells for water supply. The City provided data on large municipal water customers.

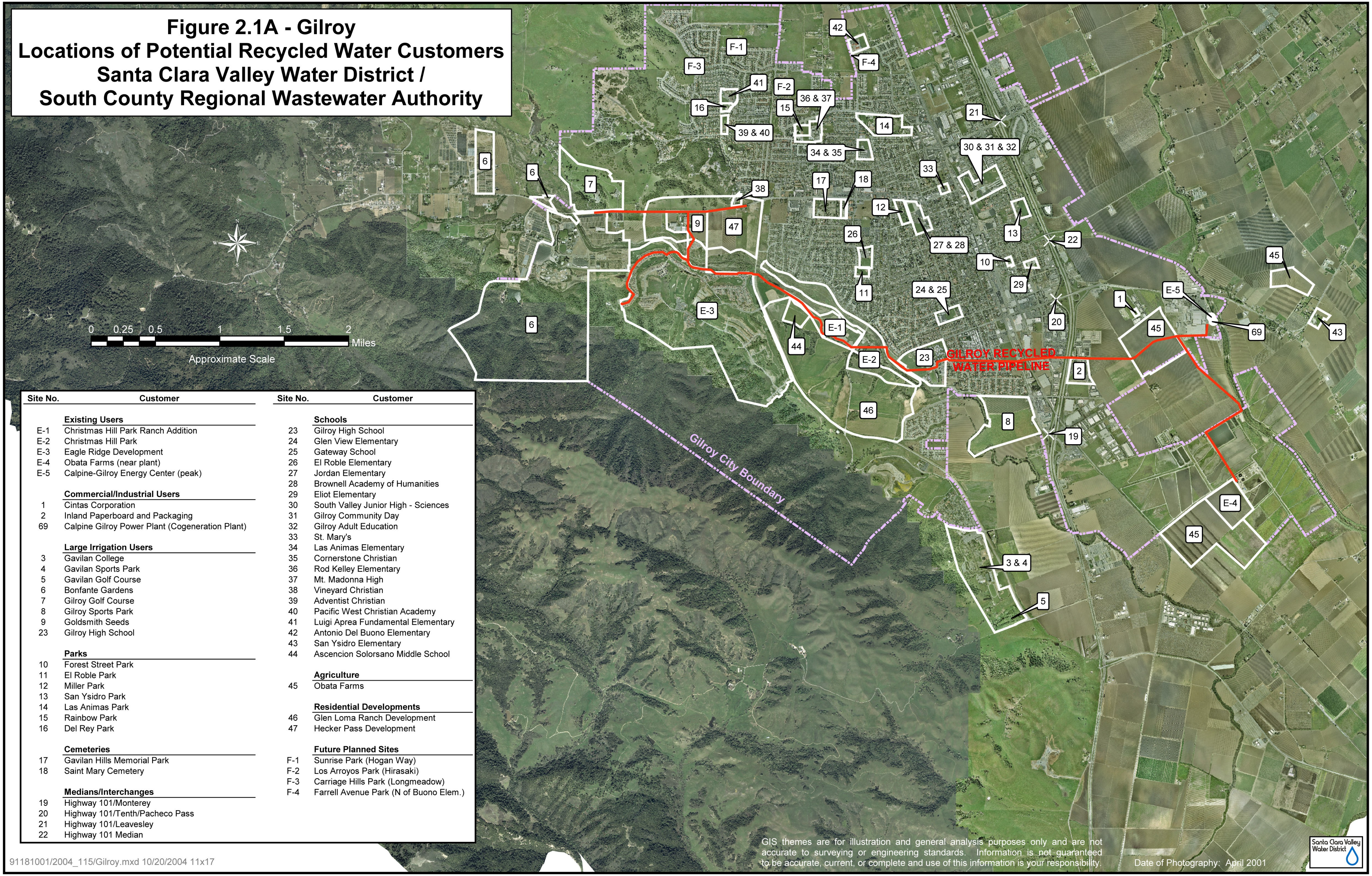
In many cases, landscape irrigation customers use less water than necessary as a result of conservation practices and cost considerations. Therefore, expected landscape irrigation requirements for the Gilroy area were calculated based on evapotranspiration and rainfall data. Based on direction from the District and SCRWA at the second project progress meeting in September 2003, actual historical irrigation water usage data was used to conservatively estimate expected annual average recycled water use for irrigation. Calculated irrigation requirements, as defined in Section 2.3.1, were used to estimate irrigation use at sites for which existing use data was not available. Calculated irrigation requirements were also used to estimate peak month demand, peak day demand, and peak hour demand for distribution considerations. Peak sizing requirements and distribution system impacts are discussed in Chapter 3.

Agricultural irrigation requirements are subject to numerous variables, including crop selection, field rotation, planting season, planting date, and other farmer-specific factors. Due to the numerous variables affecting agricultural irrigation demand, agricultural irrigation requirements were estimated based on communication with local farmer Tom Obata of Obata Farms. Coordination and direct contact with farmers receiving recycled water on an annual basis is recommended. SCRWA currently works with local farmers regularly to insure sufficient recycled water supply is available.

2.3.1 Commercial and Industrial Customers

Three potential commercial and industrial recycled water customers were identified and quantified. Cintas Corporation operates a commercial laundry facility that cleans commercial towels and uniforms five days per week, Monday through Friday. Commercial laundries are regulated allowable users of recycled water. The daily water usage is

Figure 2.1A - Gilroy
Locations of Potential Recycled Water Customers
Santa Clara Valley Water District /
South County Regional Wastewater Authority



Site No.	Customer
	Existing Users
E-1	Christmas Hill Park Ranch Addition
E-2	Christmas Hill Park
E-3	Eagle Ridge Development
E-4	Obata Farms (near plant)
E-5	Calpine-Gilroy Energy Center (peak)
	Commercial/Industrial Users
1	Cintas Corporation
2	Inland Paperboard and Packaging
69	Calpine Gilroy Power Plant (Cogeneration Plant)
	Large Irrigation Users
3	Gavilan College
4	Gavilan Sports Park
5	Gavilan Golf Course
6	Bonfante Gardens
7	Gilroy Golf Course
8	Gilroy Sports Park
9	Goldsmith Seeds
23	Gilroy High School
	Parks
10	Forest Street Park
11	El Roble Park
12	Miller Park
13	San Ysidro Park
14	Las Animas Park
15	Rainbow Park
16	Del Rey Park
	Cemeteries
17	Gavilan Hills Memorial Park
18	Saint Mary Cemetery
	Medians/Interchanges
19	Highway 101/Monterey
20	Highway 101/Tenth/Pacheco Pass
21	Highway 101/Leavesley
22	Highway 101 Median

Site No.	Customer
	Schools
23	Gilroy High School
24	Glen View Elementary
25	Gateway School
26	El Roble Elementary
27	Jordan Elementary
28	Brownell Academy of Humanities
29	Eliot Elementary
30	South Valley Junior High - Sciences
31	Gilroy Community Day
32	Gilroy Adult Education
33	St. Mary's
34	Las Animas Elementary
35	Cornerstone Christian
36	Rod Kelley Elementary
37	Mt. Madonna High
38	Vineyard Christian
39	Adventist Christian
40	Pacific West Christian Academy
41	Luigi Aprea Fundamental Elementary
42	Antonio Del Buono Elementary
43	San Ysidro Elementary
44	Ascencion Solorsano Middle School
	Agriculture
45	Obata Farms
	Residential Developments
46	Glen Loma Ranch Development
47	Hecker Pass Development
	Future Planned Sites
F-1	Sunrise Park (Hogan Way)
F-2	Los Arroyos Park (Hirasaki)
F-3	Carriage Hills Park (Longmeadow)
F-4	Farrell Avenue Park (N of Buono Elem.)

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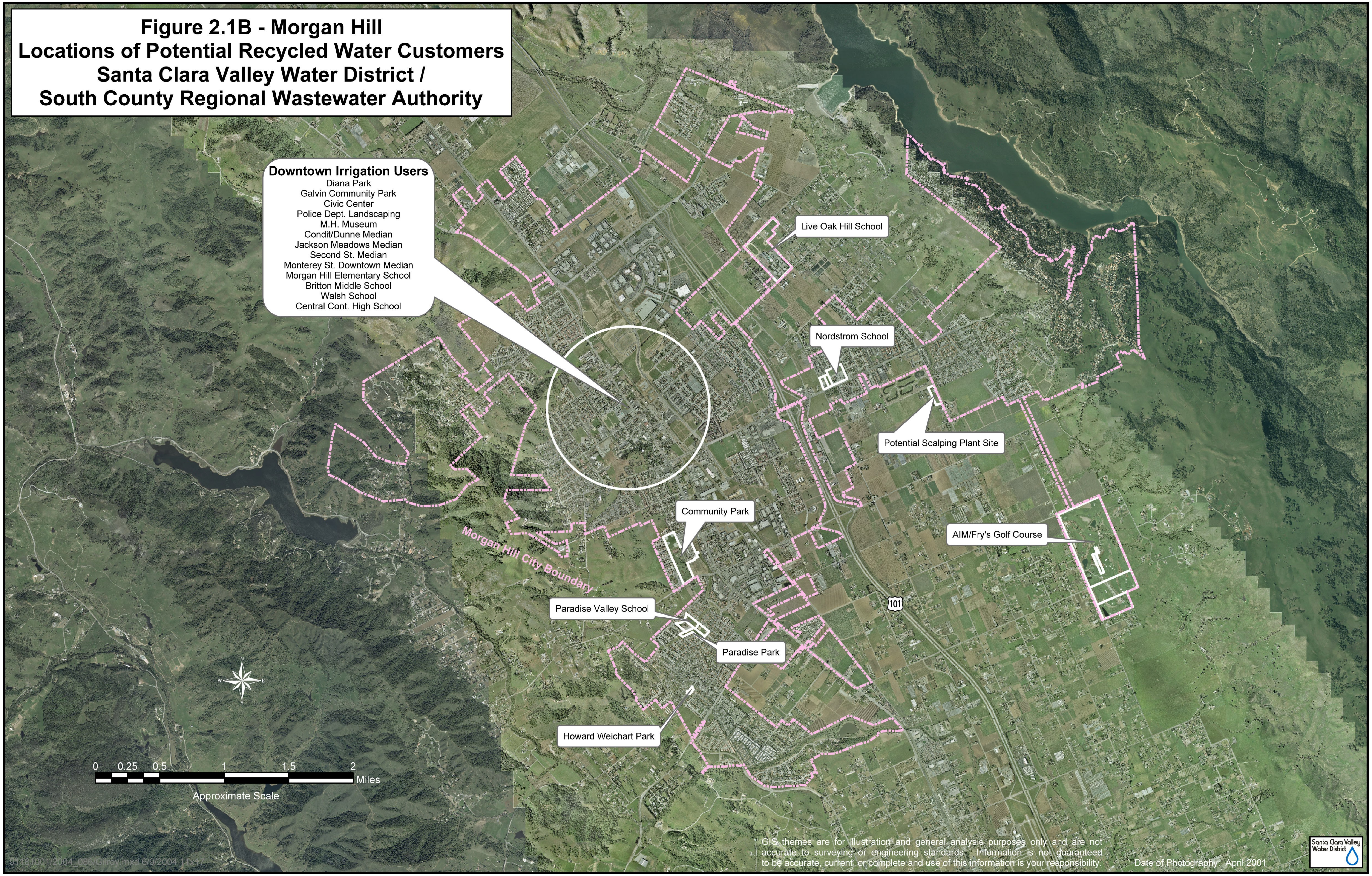
Date of Photography: April 2001

Santa Clara Valley Water District

Figure 2.1B - Morgan Hill Locations of Potential Recycled Water Customers Santa Clara Valley Water District / South County Regional Wastewater Authority



GIS themes are for illustration and general analysis purposes only and are not accurate to surveying or engineering standards. Information is not guaranteed to be accurate, current, or complete and use of this information is your responsibility.

Date of Photography: April 2001

91181001/2004_086/Gilroy.mxd 6/9/2004 11x17 approximately 50,000 gallons per day (gpd), with an annual average usage of approximately 45 acre-feet per year (afy). Cintas may be able to replace most of its potable water use with recycled water.

Inland Paperboard and Packaging operates a manufacturing facility with an average daily use of 30,000 gpd, with an annual average usage of approximately 34 afy. Inland may not be able to replace all of its potable process water with recycled water. A conservative assumption of 75% of process water replaced with recycled water was based on customer contact and best professional judgment. This results in an expected annual recycled water usage of 26 afy, or 22,500 gpd.

Calpine Gilroy Power Plant has requested to use recycled water for cooling towers. The plant is expected to use approximately 100 million gallons (MG) of recycled water annually, or 307 afy. Expected average flowrate on operational days is 0.65 mgd. Peak day flow rate is 0.99 mgd.

The total estimated demand for commercial and industrial customers is approximately 378 afy. Table 2.1 summarizes information for each identified commercial and industrial customer, including location, use, and estimated demand for recycled water. Maximum month demands for commercial and industrial customers are estimated at 10% of annual demand for Cintas and Inland, and at 23 acre-feet (0.65 mgd) for Calpine. Total maximum month demands for commercial and industrial use is 67 acre-feet (0.73 mgd).

Table 2.1 Potential Commercial and Industrial Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Site No.	**Customer**	**Location**	**Use**	**Average Demand** (afy)[1]
1	Cintas Corporation	934 Holloway	Laundry	45[2]
2	Inland Paperboard and Packaging	6400 Jamieson	Industrial Process	26[3]
69	Calpine Gilroy Power Plant	Pacheco Pass	Cooling	307[4]
			TOTAL	**378**

Notes:
(1) Annual average recycled water demand, acre-feet per year (afy).
(2) Laundry operates five days per week, Monday-Friday, with an average daily flow of 50,000 gallons per day (gpd).
(3) Average 2003 flow is 30,000 gpd, with conservative assumption of 75% of process water replaced with recycled water.
(4) Based on an average annual recycled water demand of 100 million gallons.

2.3.2 Landscape Irrigation Requirements

The amount of water required for potential landscape irrigation customers is directly dependent on precipitation and evapotranspiration. The amount of precipitation, evapotranspiration, and irrigation required for potential irrigation customers are listed in Table 2.2.

Table 2.2 Average Annual Landscape Irrigation Requirements
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Month	Evapo-transpiration(1) (inches)	Rainfall(2) (inches)	Net Irrigation Requirement(3) (inches)	Percent of Annual(4) (%)
January	1.12	4.47	0	--
February	1.51	3.85	0	--
March	3.13	3.29	0	--
April	4.42	1.44	4.0	9%
May	5.69	0.35	7.2	16%
June	6.26	0.11	8.3	18%
July	6.80	0.05	9.1	20%
August	5.91	0.05	7.9	17%
September	4.64	0.39	5.8	13%
October	3.13	0.82	3.1	7%
November	1.62	2.60	0	--
December	0.90	3.31	0	--
Total	**45.1**	**20.7**	**45.5 (3.8 feet)**	**100%**

Notes:

(1) Source: California Irrigation Management Information System, Average Yearly ET_0 Report, Morgan Hill Station. Adjusted for landscape irrigation coefficient, k_L.

(2) Source: Western Regional Climate Center, Station No. 043417, Gilroy, CA. 1957-2003.

(3) [Evapotranspiration - Rainfall] * 1.15 / 0.85. Where 0.85 = 85% Irrigation Efficiency Factor (Average value from Carlos and Guitjens, University of Nevada) and 1.15 = 15% Leaching Fraction (Average value from Ayers and Westcot, “Water Quality for Agriculture”, Food and Agriculture Organization of the United Nations).

(4) Current month net irrigation requirement divided by total net irrigation requirement.

The following formula was used to calculate the amount of evapotranspiration from landscaped areas in Gilroy:

$ET_L = K_L * ET_0$, where:

ET_L = Evapotranspiration of landscaped areas (in inches)

K_L = Landscaped area crop coefficient

ET_0 = Reference evapotranspiration (in inches)

The reference evapotranspiration was obtained from the California Irrigation Management Information System Average Yearly ET_0 Report for the nearest station, No. 132 in Morgan Hill. The landscaped area crop coefficient is the product of factors for species (k_S), density (k_d), and microclimate (k_{mc}). Landscaped areas were assumed to consist of approximately 90 percent grassed areas and 10 percent trees. Rainfall data for Gilroy was obtained from the Western Regional Climate Center, Gilroy Station No. 043417. Average monthly rainfall data from 1957-2003 was available.

As seen in Table 2.2, the net annual average landscape irrigation requirement in the Gilroy area is approximately 45.5 inches/year, or 3.8 feet/year. The irrigation season is roughly April through October, a period of seven months. Average landscape irrigation demand peaks in the month of July at 9.1 inches, 20 percent of the annual total. These values were used to estimate peak irrigation demand for recycled water and distribution system sizing requirements.

2.3.3 Landscape Irrigation Customers

Eight potential large landscape irrigation customers were identified in the Gilroy area, including Gavilan College, Gavilan Sports Park, Gavilan Golf Course, Bonfante Gardens, Gilroy Golf Course, Gilroy Sports Park, Goldsmith Seeds, and Gilroy High School. The total estimated seasonal demand for all eight large landscape irrigation customers is approximately 1014 afy during the seven-month irrigation season, based on current and expected water usage.

The Gavilan Complex, including Gavilan College, Gavilan Sports Park, and Gavilan Golf Course has a total seasonal estimated recycled water usage of 228 acre-feet, based on current water usage. An implementation concern at the Gavilan Complex is that the current potable supply and irrigation systems are a combined system, requiring potentially costly retrofits to separate. Gavilan's sports fields and golf course would be easier to convert to recycled water than the college campus. The 11-hole Gilroy Golf Course is a previous user of recycled water, and should be relatively easy to reconnect. The Gilroy Golf Course has tentative future plans to expand to 18 holes, possibly increasing seasonal demand for recycled water from the current water usage of 144 acre-feet per year. The Gilroy Sports Park is a planned site that will be constructed in phases, eventually reaching a total irrigable area of 60 acres at buildout. Construction of the Gilroy Sports Park will include the construction of a 12-inch diameter recycled water distribution pipeline.

The District met with Bonfante Gardens to discuss the use of recycled water at the theme park for irrigation and other uses. At this time, annual recycled water usage was initially estimated at 340 acre-feet, approximately half of Bonfante Gardens' current water usage. Bonfante Gardens is the largest potential customer of recycled water, and continued interaction between the District and Bonfante Gardens is planned. An initial estimate of annual recycled water usage at Goldsmith Seeds is 15 acre-feet, approximately half of current groundwater usage.

Table 2.3 summarizes information for each identified potential large landscape irrigation customer, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 205 acre-feet (2.2 mgd) is based on irrigation requirements defined in Table 2.2.

Additional smaller landscape irrigation customers in the Gilroy area were also identified, including parks, cemeteries, new residential developments, highway medians, highway interchanges, and schools. Although each individual potential customer does not have a large quantity of expected recycled water demand, when taken as a whole small customers could contribute a significant volume of recycled water use. The total estimated seasonal demand for smaller landscape irrigation customers is approximately 673 afy during the seven-month irrigation season, based on current water usage.

Seven parks throughout the City of Gilroy were identified as potential recycled water irrigation customers, with a total estimated irrigable area of 42 acres and estimated seasonal recycled water demand of 138 afy based on current water usage. The main potential implementation concern at parks is cross-connection of potable supply for drinking fountains and restrooms. Two small parks in Gilroy, Renz Park and Butcher Park, were reviewed but not considered as they had minimal irrigable area.

Table 2.4 summarizes information for each identified park, including location, irrigable area, and estimated demand for recycled water. The total maximum month demands of 32 acre-feet (0.4 mgd) are based on irrigation requirements defined in Table 2.2.

Two cemeteries were identified as potential recycled water irrigation customers, Gavilan Hills Memorial Park and Saint Mary Cemetery. Based on customer contact, the cemeteries would be willing to use recycled water for irrigation, with no obvious concerns. The cemeteries have a total estimated irrigable area of 11 acres and estimated seasonal recycled water demand of 18 afy based on current usage. Customer contact with the cemeteries indicated a desire to use more water than current usage, which is low due to conservation efforts and economic limitations.

Irrigation of highway medians and interchanges is considered an excellent use of recycled water. Based on contact with Caltrans, the median of Highway 101 through Gilroy and three highway interchanges are potential sites for irrigation with recycled water. These sites are not currently irrigated. A potential implementation factor is the maintenance requirements of

Table 2.3 Potential Large Landscape Irrigation Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)[1]	Seasonal Demand (afy)[2]	Max Month Demand (ac-ft)[3]	Max Month Demand (mgd)[3,4]
3	Gavilan College	Santa Teresa / Mesa	20	72	15	0.17
4	Gavilan Sports Park	Santa Teresa	7.2	26	5	0.06
5	Gavilan Golf Course	Santa Teresa / Castro Valley	36	130	27	0.30
6	Bonfante Gardens	Hecker Pass / Burchell	90	340	68	0.74
7	Gilroy Golf Course	Hecker Pass Highway	40	144	30	0.33
8	Gilroy Sports Park	Monterey / W Luchessa	60	226	45	0.49
9	Goldsmith Seeds	Hecker Pass Highway	N/A	15	3	0.03
23	Gilroy High School	Tenth / Princevale	16	61	12	0.13
			TOTAL	**1014**	**205**	**2.2**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

Table 2.4 Potential Small Landscape Irrigation Customers - Parks
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
10	Forest Street Park	Forest / Seventh	1.0	4	0.8	0.01
11	El Roble Park	Wren / Perrelli	3.2	11	2	0.02
12	Miller Park	Second / Princevalle	4.3	15	3	0.04
13	San Ysidro Park	Murray / Lewis / 101	6.8	21	6	0.07
14	Las Animas Park	Mantelli / Wren	24	77	18	0.20
15	Rainbow Park	Mantelli / Hirasaki	1.0	4	0.7	0.01
16	Del Rey Park	Calle del Rey / Partridge	1.7	6	1.3	0.01
			TOTAL	**138**	**32**	**0.4**

Notes:

(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.

(2) Average seasonal recycled water demand, acre-feet per year (afy).

(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.

(4) Maximum month demand in million gallons per day (mgd).

the irrigated areas, a fiscal responsibility that Caltrans cannot afford. The highway medians and interchanges in the Gilroy area have a total estimated irrigable area of 38 acres and estimated seasonal recycled water demand of 144 acre-feet based on irrigation requirements in Table 2.2. In the long-term, irrigation of highway medians and interchanges all the way north through Morgan Hill is a potential use of recycled water.

Table 2.5 summarizes information for each identified cemetery, highway median, and highway interchange, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 39 acre-feet (0.4 mgd) is based on irrigation requirements defined in Table 2.2.

Twenty-one school yards throughout the City of Gilroy, not including previously discussed Gilroy High or Gavilan College, were identified as potential recycled water irrigation customers. These schools have a total estimated irrigable area of 58 acres and estimated seasonal recycled water demand of 195 afy based on current water usage. A potential implementation concern at schools is cross-connection of potable supply for drinking fountains and restrooms.

Table 2.6 summarizes information for each identified school, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 45 acre-feet (0.5 mgd) is based on irrigation requirements defined in Table 2.2.

Two new residential developments in the City of Gilroy were identified as potential recycled water irrigation customers, Glen Loma Ranch Development and Hecker Pass Development. These developments have a total estimated irrigable area of 47 acres and estimated seasonal recycled water demand of 179 afy based on estimated water usage. As these developments are not yet constructed, estimated recycled water demand is based on Specific Plan documentation that identifies the planned use of recycled water for landscape irrigation of parks and public area features such as ponds. Estimated irrigable acreage for the Glen Loma Ranch Development is based on two parks with 90% of the total acreage (19.3 acres) assumed irrigable (17 acres), one new elementary school with 3 estimated irrigable acres, and 18 community focal points with approximately 0.5 irrigable acres each. Estimated irrigable acreage for the Hecker Pass Development is based on two parks with 90% of the total acreage (19 acres) assumed irrigable (17 acres). Use of recycled water for landscape irrigation of individual homes is not planned at this time. The District and SCRWA should coordinate with developers of these planned residential developments as early as possible to ensure the use of recycled water.

Table 2.7 summarizes information for each planned residential development, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 36 acre-feet (0.39 mgd) is based on irrigation requirements defined in Table 2.2.

Table 2.5 Potential Small Landscape Irrigation Customers - Cemeteries, Medians, Interchanges
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
17	Gavilan Hills Memorial Park Cemetery	First / Kern	10	16	8	0.08
18	Saint Mary Cemetery	First / Wren	1	2	0.8	0.01
19	Monterey Interchange	101 / Monterey	3.5	13	3	0.03
20	101/Tenth Interchange	101 / Pacheco Pass	10	38	8	0.08
21	Leavesley Interchange	101 / Leavesley	6.4	24	5	0.05
22	Caltrans - 101 Median	Highway 101 Median	18	68	14	0.15
			TOTAL	**162**	**39**	**0.4**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

Table 2.6 Potential Small Landscape Irrigation Customers - Schools
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)[(1)]	Seasonal Demand (afy)[(2)]	Max Month Demand (ac-ft)[(3)]	Max Month Demand (mgd)[(4)]
24	Glen View Elementary	Eighth / Princevale	5	4	4	0.04
25	Gateway School	Hanna / Ninth	N/A(5)	N/A(5)	N/A(5)	N/A(5)
26	El Roble Elementary	Third / Wren	5	19	4	0.04
27	Jordan Elementary	Third / Hanna	3.5	13	3	0.03
28	Brownell Academy	Second / Carmel	3.5	13	3	0.03
29	Eliot Elementary	7th / Old Gilroy	1.3	5	1	0.01
30	South Valley Junior	I.O.O.F. / Murray	12	36	9	0.10
31	Gilroy Community Day	I.O.O.F. / Forest	N/A(5)	N/A(5)	N/A(5)	N/A(5)
32	Gilroy Adult Education	I.O.O.F. / Forest	N/A(5)	N/A(5)	N/A(5)	N/A(5)
33	St. Mary's	First / Church	2	8	2	0.02
34	Las Animas Elementary	Wren / Welburn	4	15	3	0.03
35	Cornerstone Christian	Wren / Welburn	N/A(5)	N/A(5)	N/A(5)	N/A(5)
36	Rod Kelley Elementary	Mantelli / Kern	6.5	25	5	0.05
37	Mt. Madonna High	Mantelli / Hirasaki	N/A(5)	N/A(5)	N/A(5)	N/A(5)
38	Vineyard Christian	First / Santa Teresa	N/A	N/A	N/A	N/A
39	Adventist Christian	Mantelli / Welburn	3	11	2	0.02
40	Pacific West Christian	Mantelli / Welburn	N/A(5)	N/A(5)	N/A(5)	N/A(5)
41	Luigi Aprea Elementary	Calle Del Rey / Lerma	4	15	3	0.03
42	Del Buono Elementary	Wren / Farrell	3	11	2	0.02
43	San Ysidro Elementary	Pacheco Pass / Frazier	2.1	8	2	0.02
44	Ascencion Solorsano	Grenache / Club	3	11	2	0.02
			TOTAL	**195**	**45**	**0.5**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).
(5) Not applicable as this site shares fields with the prior school listed.

Table 2.7 Potential Small Landscape Irrigation Customers - New Residential Developments
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
46	Glen Loma Ranch Development	Along Santa Teresa	30	114	23	0.25
47	Hecker Pass Development	Hecker Pass Highway	17	65	13	0.14
			TOTAL	**179**	**36**	**0.39**

Notes:

(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values based on Specific Plan documentation for each development.

(2) Average seasonal recycled water demand, acre-feet per year (afy).

(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.

(4) Maximum month demand in million gallons per day (mgd).

2.3.4 Agricultural Irrigation Customers

The only agricultural customer considered was local farmlands, in the area near the WWTP. Obata Farms is an existing recycled water customer of approximately 60 afy, irrigating approximately 35 acres. The potential exists to expand recycled water usage to irrigate an additional 225 acres of cropland west and north of the WWTP. Direct contact with agricultural customers on a regular basis is necessary to estimate irrigation demands, consider crop rotation, field usage, weather, and timing of planting. An additional 855 afy of agricultural use was estimated for planning purposes based on 3.8 ft/yr of irrigation over 225 additional acres.

SCRWA is planning the future installation of a wet weather discharge pipeline south from the WWTP to the Pajaro River. Additional agricultural customers could be served along this alignment, but the quantity of use for these customers is not estimated at this time. If additional agricultural customers are along the preferred recycled water distribution pipeline routing, they could be considered based on the direction and input of the District.

2.3.5 Morgan Hill Customers

Twenty-one potential recycled water customers were identified in downtown Morgan Hill by the previous 1995 Master Plan. These customers include parks, government facilities, street medians, and schools. The total estimated recycled water demand for downtown Morgan Hill customers is 389 afy annually. Maximum month demands are estimated to be 78 acre-feet (0.85 mgd), based on projected usage estimated from the previous Master Plan.

A separate potential project in Morgan Hill involves irrigation of the American Institute of Mathematics (AIM) Golf Course. This 100 acre golf course would require approximately 380 afy based on 3.8 ft/yr of irrigation, with a maximum month demand of 76 acre-feet (0.83 mgd).

Table 2.8 summarizes potential recycled water demand identified for Morgan Hill customers.

2.3.6 Future Potential Customers

Future potential recycled water customers could include additional expansion in the Gilroy and Morgan Hill area and eventual connection to a District-wide recycled water distribution system. Additional future customers could potentially include four future parks identified by the City of Gilroy Planning and Parks and Recreation Departments, extended highway median and interchange irrigation, agricultural customers on the planned southern pipeline extension to the Pajaro River, and the Calpine Gilroy Power Plant. Other potential future uses mentioned previously include residential irrigation, street cleaning, groundwater recharge, and stream-flow augmentation.

Table 2.8 Potential Morgan Hill Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Site No.	Customer	Irrigable Area (acres)	Seasonal Demand (afy)[(2)]	Max Month Demand (ac-ft)[(3)]	Max Month Demand (mgd)[(4)]
48	Paradise Park	8[(1)]	22	4.5	0.05
49	Diana Park	4[(1)]	12	2.3	0.03
50	Galvin Community Park	7.3[(1)]	11	2.2	0.02
51	Howard Weichart Park	1[(1)]	3	0.6	0.01
52	Community Park	23[(1)]	67	13.4	0.15
53	Civic Center	8[(1)]	23	4.7	0.05
54	Police Dept. Landscaping	0.1[(1)]	0.3	0.1	0.001
55	M.H. Museum	0.2[(1)]	1	0.1	0.001
56	Condit/Dunne Median	0.1[(1)]	0.3	0.1	0.001
57	Jackson Meadows Median	0.1[(1)]	0.3	0.1	0.001
58	Second St. Median	0.5[(1)]	1.5	0.3	0.003
59	Cochrane Median	2[(1)]	5.8	1.2	0.01
60	Monterey St. Downtown Median	2.3[(1)]	7	1.3	0.01
61-67	Morgan Hill School District	N/A[(1)]	235	47.0	0.51
68	AIM/Fry's Golf Course	100	380	76.0	0.83
		TOTAL	**769**	**154**	**1.7**

Notes:
(1) Estimated irrigable acreage from 1995 Master Plan.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

As with all future sites, it is important to note that their development may not happen or come to fruition. Inclusion of future potential customers is useful for long-term planning purposes. It is not advisable to quantify potential demands and distribution system requirements until the sites come to fruition. An important goal for this Master Plan is to ensure that future construction and remodeling of parks, schools, and other applicable facilities in the City is designed for the use of recycled water.

Table 2.9 summarizes information for future planned parks in the Gilroy area that are located but not currently sized.

Table 2.9 Future Planned Parks in the Gilroy Area
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Park Name	Location
Sunrise Park	Hogan Way / Saddler
Los Arroyos Park	Hirasaki / Morrow
Carriage Hills Park	Longmeadow / Rancho Hills
Farrell Avenue Park	Wren / Farrell

2.3.7 Market Quantification Summary

The discussion in this chapter is a quantification of potential recycled water demands at identified sites in the Gilroy and Morgan Hill areas. Although the SCRWA WWTP currently produces up to 3 mgd of tertiary treated recycled water, upgrades and expansion to 6 mgd tertiary treatment capacity are planned. Chapter 3 includes distribution alternatives and requirements, including detailed discussion of SCRWA WWTP expansion and timing.

Existing recycled water users have an annual average usage of approximately 711 afy, with an historic maximum month demand of approximately 145 acre-feet (1.8 mgd). The identified commercial and industrial customers have an annual average usage of approximately 378 afy, with an estimated maximum month demand of 67 acre-feet (0.73 mgd). The identified large irrigation customers have an annual average usage of approximately 1,014 afy based on existing water usage and usage assumptions for Bonfante Gardens and Goldsmith Seeds, with an estimated maximum month demand of 205 acre-feet (2.2 mgd). The identified small irrigation customers have an annual average usage of 673 afy based on existing water usage, with an estimated maximum month demand of 150 acre-feet (1.6 mgd). The additional usage at local farmlands was estimated at 855 afy, with a maximum month demand of 171 acre-feet (1.9 mgd). Morgan Hill customers have an annual average usage of 389 afy, plus additional potential use of 380 afy at the AIM/Fry's Golf Course. Morgan Hill customers have a total maximum month demand of 154 acre-feet (1.67 mgd).

If all customers discussed above were supplied recycled water, peak monthly usage would exceed 9 mgd. Approximately 1 mgd of recycled water would be used during the period from November through March, assuming minimal irrigation usage.

Figure 2.2 summarizes the potential monthly recycled water usage, including existing customers, estimated values for potential commercial and industrial customers, estimated values for potential irrigation customers, and total average monthly recycled water demand.

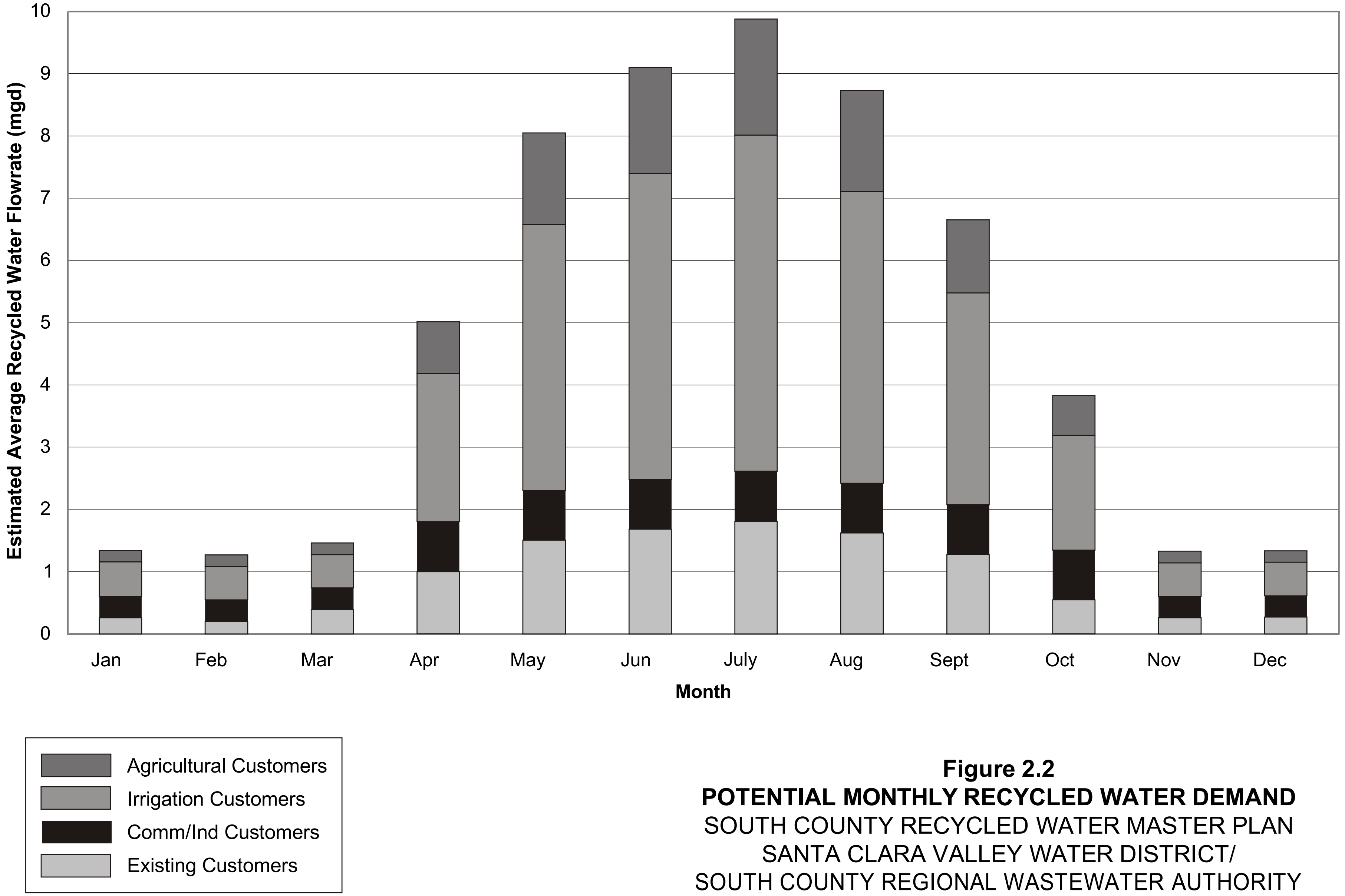


Figure 2.2
POTENTIAL MONTHLY RECYCLED WATER DEMAND
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

2.4 DATABASE CATEGORIES AND DEFINITIONS

A complete database of potential recycled water customers was created, and is included in Appendix B. The database was also delivered to the District as a Microsoft Excel file to allow future entries and editing. Database categories include existing customers, commercial and industrial customers, large irrigation customers, parks, cemeteries, medians and interchanges, schools, and agriculture. These were the main categories identified in order to pursue these customers and convert them to recycled water use.

2.5 WATER QUALITY SUMMARY

The disinfected tertiary recycled water produced at the SCRWA WWTP meets all Title 22 water quality criteria requirements, as reported in annual monitoring reports. Existing users of recycled water from the SCRWA WWTP have not reported any concerns regarding water quality. Due to the success of the existing recycled water customers, it is expected that the recycled water quality will be sufficient for new customers. Nevertheless, current recycled water quality was assessed to verify its quality and acceptability.

SCRWA effluent monitoring results were reviewed for key irrigation water quality parameters. A comparison of the effluent water quality to water quality guidelines for irrigation was developed and is presented in Table 2.10. Effluent concentrations represent average values from 2001-2002 based on annual SCRWA monitoring reports. For constituents not monitored and reported by SCRWA, average data for SCRWA recycled water from District monitoring for the Advanced Recycled Water Treatment Feasibility Study was used. The water quality guidelines for irrigation are from the District's Advanced Recycled Water Treatment Feasibility Study.

Highlighted values within Table 2.10 indicate the range in which the SCRWA effluent falls. As can be seen from Table 2.10, the degree of use restriction for irrigation parameters ranges from none to slight-to-moderate.

Table 2.11 summarizes the potential irrigation reuse restrictions of recycled water from SCRWA, based on the results of the comparison made in Table 2.10. None of the water quality parameters should place severe restrictions on the use of recycled water for irrigation. Existing recycled water use at all sites in Gilroy has been successful, highlighting the potential for increased irrigation use with minimal water quality concerns.

Extensive water quality analysis for other uses, including industrial process uses, is available in the District's Advanced Recycled Water Treatment Feasibility Study.

Table 2.10 Water Quality Guidelines for Irrigation(1)
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Irrigation Water Key Quality Parameter	Units	Established Criteria Degree of Use Restriction(2,3,4)			
		None	**Slight to Moderate**	**Severe**	**SCRWA Effluent(5)**
Salinity EC_w	dS/m	<0.7	**0.7-3.0**	>3.0	1.1
TDS	mg/L	<450	**450-2000**	>2000	634
Permeability(6)			EC_w = 1.1		
SAR = 0-3 and EC_w =		>0.7	0.7-0.2	<0.2	
SAR(7,8) = 3-6 and EC_w =		>1.2	**1.2-0.3**	<0.3	1.1
SAR = 6-12 and EC_w =		>1.9	1.9-0.5	<0.5	
SAR = 12-20 and EC_w =		>2.9	2.9-1.3	<1.3	
SAR = 20-40 and EC_w =		>5.0	5.0-2.9	<2.9	
Sodium (Na)					
Surface	SAR	<3	**3-9**	>9	4.1(7,8)
Sprinkler	mg/L	<70	**>70**		113
Chloride (Cl)					
Surface	mg/L	<140	**140-355**	>355	155
Sprinkler	mg/L	<100	**>100**		155
Boron (B)	mg/L	**<0.7**	0.7-3.0	>3.0	0.67
Bicarbonate	mg/L	<90	**90-500**	>500	237(8)
pH	---		**6.5-8.4** (normal range)		7.6
Ammonia (NH_4)	mg/L		(see combined N values below)		0.07
Nitrate (NO_3)	mg/L		(see combined N values below)		2.2
Combined Nitrogen (N)	mg/L	**<5**	5-30	>30	3.7

Notes:

(1) Adapted from University of California Committee of Consultants (1974), and Ayers and Westcot (1994).

(2) Method and Timing of Irrigation: Assumes normal surface and sprinkler irrigation methods are used. Water is applied as needed, and the plants utilize a considerable portion of the available stored soil water (50% or more) before the next irrigation. At least 15 percent of the applied water percolates below the root zone (leaching fraction [LF] > 15%).

(3) Site Conditions: Assumes soil texture ranges from sandy loam to clay with good internal drainage with no uncontrolled shallow water table present.

(4) Definitions of "The Degree of Use Restriction" terms:

None = Recycled water can be used similar to the best available irrigation water.

Slight = Some additional management will be required above that with the best available irrigation water in terms of leaching salts from the root zone and/or choice of plants.

Moderate = Increased level of management required and choice of plants limited to those which are tolerant of the specific parameters.

Severe = Typically cannot be used due to limitations imposed by the specific parameters.

(5) Average SCRWA effluent value, 2001-2002. Source: 2001-2002 Annual SCRWA Reports.

(6) Permeability is evaluated based on the combination of adjusted sodium adsorption ratio (SAR) and Electrical Conductivity (EC) values.

(7) Adjusted SAR (adj. R_{Na}) includes the effect of bicarbonate/calcium ratio (Ca_x).

(8) Average SCRWA recycled water value. Source: SCVWD monitoring of recycled water for Advanced Recycled Water Treatment Feasibility Study.

Table 2.11 Recycled Water Use Restrictions
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Water Quality Parameter	Degree of Use Restriction
Salinity	Slight
Permeability	Slight
Sodium	Slight
Chloride	Slight
Boron	None
Bicarbonate	Slight to Moderate
Combined Nitrogen	None

2.5.1 General Irrigation Use Guidelines

It is important to understand that the successful long-term use of irrigation water depends on numerous factors, including rainfall, leaching, soil drainage, irrigation water management, salt tolerance of plants, and soil management practices, in addition to water quality. It may be necessary for the District and SCRWA to coordinate with individual customers to apply the best long-term irrigation practices for utilization of recycled water.

Chapter 3

DISTRIBUTION SYSTEM ALTERNATIVES EVALUATION

3.1 EXISTING RECYCLED WATER SYSTEM DESCRIPTION AND OPERATION

The previous chapters provide background, identify potential recycled water customers, and quantify demand for recycled water. This chapter reviews the existing recycled water system, provides details of and evaluates preliminary project alternatives. Chapter 4 develops the selected project alternatives for immediate-term (within one year), short-term (less than five years), and long-term (greater than five years) capital improvement programs.

The existing recycled water system in the City consists of a tertiary treatment facility at the SCRWA WWTP, a main transmission pipeline, distribution piping to the five existing recycled water customers, a storage reservoir, and pumping facilities. These facilities are described further below.

3.1.1 Existing Treatment Facilities

The SCRWA WWTP has a total secondary treatment capacity of 7.5 million gallons per day (mgd) ADWF and can currently divert up to 3 mgd of secondary effluent to tertiary facilities. The tertiary treatment process produces recycled water that meets the recycled water criteria of California's Title 22 unrestricted use classification. The tertiary treatment process consists of coagulation, filtration with sand filters, chlorination, and dechlorination. There is no existing on-site storage of treated recycled water at the WWTP. The flow of filtered water is matched to the recycled water pumping rate, or stored in an off-site reservoir described later in this chapter.

An expansion of tertiary recycled water treatment capacity to 6 mgd will be complete by the end of 2005. As part of this expansion, tertiary filtration capacity will be increased from 3 mgd to 9 mgd. However, due to diurnal flow fluctuations and limitations in storage capacity, in-plant pumping capacity, and chlorination capacity, the total tertiary treatment system capacity will be 6 mgd after the filtration expansion. The expansion will include on-site treated recycled water storage capacity of 3 million gallons (MG), with future plans of an additional 3 MG for a total of 6 MG of on-site storage. This Master Plan will define additional capacity requirements for tertiary treatment.

Upgrades or expansion of the recycled water treatment facilities located at the SCRWA WWTP are not included in this Master Plan, but are being conducted as a separate effort.

3.1.2 Existing Distribution System and Facilities

The existing recycled water distribution system consists of eight miles of 12-inch diameter pipeline, two booster pump stations, and a 1.5 million gallon storage tank. The main transmission pipeline heads generally north from the WWTP to the Princevalle Drain, where the pipeline turns west through Christmas Hill Park and the Eagle Ridge Development and Golf Course. In the Eagle Ridge Development, the existing pipeline splits to reach the storage tank and serve the distribution pipeline along Hecker Pass Highway. Obata Farms receives recycled water in the area directly to the west of the treatment plant, in addition to several other existing connections to the main transmission pipeline along Princevalle Drain, which are not currently utilized. The Calpine-Gilroy Energy Center receives recycled water via a spur that heads east from the main pipeline. A planned 12-inch diameter pipeline will serve the Gilroy Sports Park complex, and will be routed from the existing main pipeline south along Monterey Road.

One existing booster pump station is located at the SCWRA WWTP, at an elevation of 154 feet. This pump station has three pumps with a total pump capacity of 3,475 gallons per minute (gpm). A second booster pump station is located just to the west of Christmas Hill Park, at an elevation of 222 feet. This pump station has three pumps with a total pump capacity of 3,100 gpm. The existing storage tank is located in the hills above Eagle Ridge Golf Course, with a tank bottom elevation of 385 feet and an overflow elevation of 408 feet. The storage tank has a capacity of 1.5 million gallons.

Modeling results indicate that the existing distribution system does not have capacity for additional flow, preventing additional customers from being connected prior to capital improvements. This is discussed further in Section 3.4 - Hydraulic Modeling Analysis.

The existing recycled water distribution system and existing customers are summarized in Figure 3.1.

3.2 PRELIMINARY PROJECT ALTERNATIVES DEVELOPMENT

Potential customers were grouped into 12 preliminary project alternatives. The groupings were developed based on customer location, information gathered in the market assessment, and in conjunction with planning level hydraulic modeling. Customer groupings are planned to be added to the existing distribution system via a phased implementation plan. Developing preliminary alternatives served as the initial screening process, and included revisions based on working meetings with the District, SCRWA, and Carollo.

The immediate-term capital improvement program will connect the most feasible recycled water customers to the existing distribution system. Additional customers will connect as the distribution system is expanded as part of the short-term and long-term capital improvement programs.

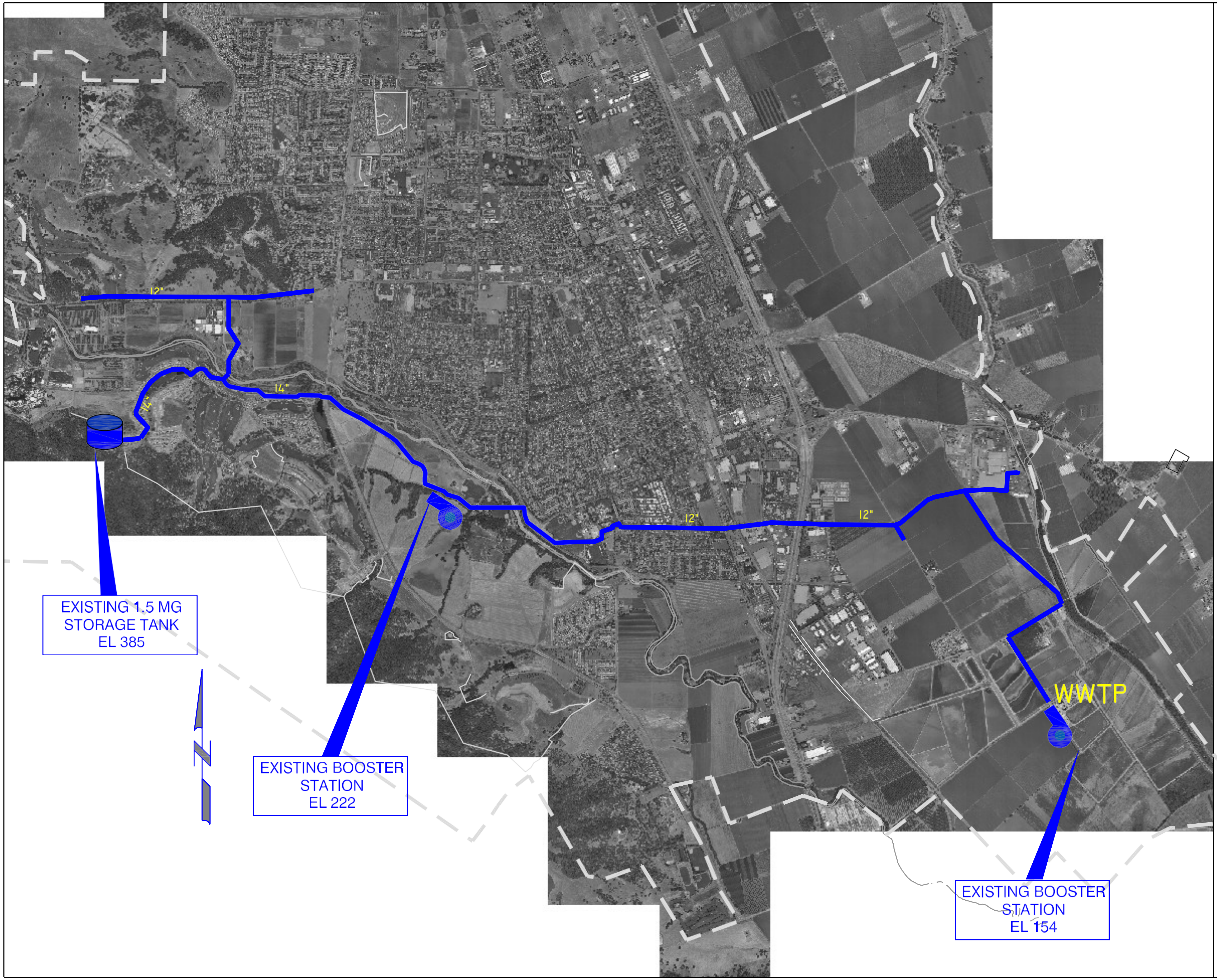


FIGURE 3.1
EXISTING RECYCLED WATER DISTRIBUTION SYSTEM
SOUTH COUNTY
RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL
WASTEWATER AUTHORITY

3.2.1 Project Grouping

Initial customer groupings were developed mainly based on location within the study area, and also considered type of use. The groupings are summarized in Table 3.1. The groups are listed in order of priority, from highest to lowest. Some groups are dependent on implementation of previous groups, while others can be implemented independently. A description outlining each group follows.

Table 3.1 Initial Customer Grouping
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Customer Group Number and Name		Site Number	Group Customers
A1	Minimal Capital Cost	23,44, 7,8,46	Gilroy High, Ascencion Solorsano Middle School, Gilroy Golf Course, Gilroy Sports Park, Glen Loma Ranch Development
A2	Industrial Customers	1,2,69	Cintas Laundry, Inland Packaging, Calpine Gilroy Power Plant
A3	Hecker Pass Customers	9,6,47	Goldsmith Seeds, Bonfante Gardens, Hecker Pass Development
Agr.	Expanded Agriculture	45	Local Farmlands - Obata Farms
B	Gavilan College Area	3,4,5	Gavilan College, Gavilan Sports Park, Gavilan Golf Course
C	First Street Loop	24,25,26, 11,27,28, 12,17,18, 38	Glen View Elem., Gateway School, El Roble Elem., El Roble Park, Jordan Elem., Brownell Academy, Miller Park, Gavilan Hills Memorial Park, Saint Mary Cemetery, Vineyard Christian
D	I.O.O.F. Avenue Spur	30,31,32, 33,13	South Valley Jr. High, Gilroy Community Day, Gilroy Adult Education, St. Mary's School, San Ysidro Park
E	Wren Avenue Spur	34,35,14, 36,37,15	Las Animas Elem., Cornerstone Christian, Las Animas Park, Rod Kelley Elem., Mt. Madonna High, Rainbow Park
F	Highway 101	19,20,21, 22	Monterey St., Tenth St., and Leavesley Rd. Interchanges; Highway 101 Median
G	Mantelli Spur (Future)	39,40,41, 16	Adventist Christian, Pacific West Christian, Luigi Aprea Elem., Del Rey Park
H	Other Future Spurs	10,29,42, 43	Forest Street Park, Eliot Elem., del Buono Elem., San Ysidro Elem.
I	Morgan Hill	48,49	Downtown Morgan Hill Sites, AIM Golf Course

Group A1, Minimal Capital Cost, includes Gilroy High School, Ascencion Solorsano Middle School, Gilroy Golf Course, Gilroy Sports Park, and Glen Loma Ranch Development. Group A1 includes those potential recycled water customers who, with minimal necessary capital costs, can connect to the existing distribution system. It is intended to connect these customers as soon as possible. The Glen Loma Ranch Development is a proposed subdivision with Specific Plan documentation already submitted to City of Gilroy Planning Department.

Group A2, Industrial Customers, includes Cintas Laundry, Inland Packaging, and Calpine Gilroy Power Plant. This group includes the identified commercial and industrial customers with year-round demand. Cintas Laundry and Inland Packaging are located in close proximity to each other. Calpine Gilroy Power Plant is adjacent to the Calpine Peaker Plant, an existing recycled water customer.

Group A3, Hecker Pass Customers, includes Goldsmith Seeds, Bonfante Gardens, and Hecker Pass Development. Group A3 maximizes increased recycled water usage with minimal additional distribution costs. The District has begun working directly with Bonfante Gardens to identify the benefits of recycled water, respond to perceived quality concerns, and minimize the time necessary to implement usage at the site. The Hecker Pass Development is a proposed subdivision with Specific Plan documentation already submitted to City of Gilroy Planning Department.

Group Agr., Expanded Agriculture, includes expanded recycled water usage at local farmlands leased by Obata Farms. Other agricultural customers could be added if feasible, based on future distribution system alignment. Although agricultural use of recycled water is a secondary objective, it may be advisable to coordinate with Obata Farms to expand usage mainly due to their close proximity to the WWTP. Tom Obata, President of Obata Farms, has offered to negotiate a recycled water user agreement that does not guarantee a specific quantity of water, as he would rather expand his usage when water is available. Obata Farms could utilize excess recycled water in the short-term while the distribution system is being expanded and other customers are brought on-line. Increased agricultural usage could utilize a larger proportion of SCRWA recycled water production capacity prior to completion and connection of new commercial, industrial, and landscape irrigation customers. This additional usage would provide SCRWA with operational flexibility such as drying the percolation ponds and additional security for the disposal of wastewater to meet discharge permit requirements, while providing the District with some revenue.

Group B, Gavilan College Area, includes Gavilan College, Gavilan Sports Park, and Gavilan Golf Course. Implementation concerns have been identified with Group B as the current potable and irrigation systems are integrated. Further evaluation of the existing interconnections and required retrofits at Gavilan will be necessary before this group is implemented as a viable alternative.

Group C, First Street Loop, includes Glen View Elementary School, Gateway School, El Roble Elementary School, El Roble Park, Jordan Elementary School, Brownell Academy, Miller Park, Gavilan Hills Memorial Park, Saint Mary Cemetery, and Vineyard Christian School. These sites are located in central Gilroy, north of the existing distribution system. While each individual school or park has a relatively low demand, as a whole these customers provide sufficient demand to be feasible.

Group D, I.O.O.F. Avenue Spur, includes South Valley Junior High School, Gilroy Community Day School, Gilroy Adult Education, St. Mary's School, and San Ysidro Park. These sites are located north and east of central Gilroy.

Group E, Wren Avenue Spur, includes Las Animas Elementary School, Cornerstone Christian School, Las Animas Park, Rod Kelley Elementary School, Mt. Madonna High School, and Rainbow Park. These sites are located north of central Gilroy.

Group F, Highway 101, includes the Monterey Street, Tenth Street, and Leavesley Road Interchanges, and the Highway 101 Median. Coordination with CalTrans and a maintenance contract will be necessary before implementation of this grouping. Maintenance concerns are the main reason for the prioritization of highway medians and interchanges as Group F.

Group G, Mantelli Spur (Future), includes Adventist Christian School, Pacific West Christian School, Luigi Aprea Elementary School, and Del Rey Park. These sites are located northwest of central Gilroy.

Group H, Other Future Spurs, includes Forest Street Park, Eliot Elementary School, del Buono Elementary School, and San Ysidro Elementary School. Future planned parks in these areas could also be served via connections near those of Group G and H customers.

Group I, Morgan Hill, includes downtown Morgan Hill customers consisting of parks, government facilities, street medians, and schools as identified in Chapter 2, as well as the American Institute of Mathematics private golf course, located on the far southeast side of Morgan Hill.

The composition of each customer group also considered possible distribution system alignment, proximity to the existing distribution system, and other implementation factors. These groupings were used to develop peak flow demands, develop initial pipeline alignments, perform a planning-level hydraulic analysis, and assess initial environmental constraints. These factors were utilized to determine preferred projects for implementation.

The locations of customer groupings are summarized in Figure 3.2.

3.2.2 Peak Flow Demands

Peak flow demands for each potential customer were determined. Maximum month, peak day, and peak hour flow demands were calculated based on available information and

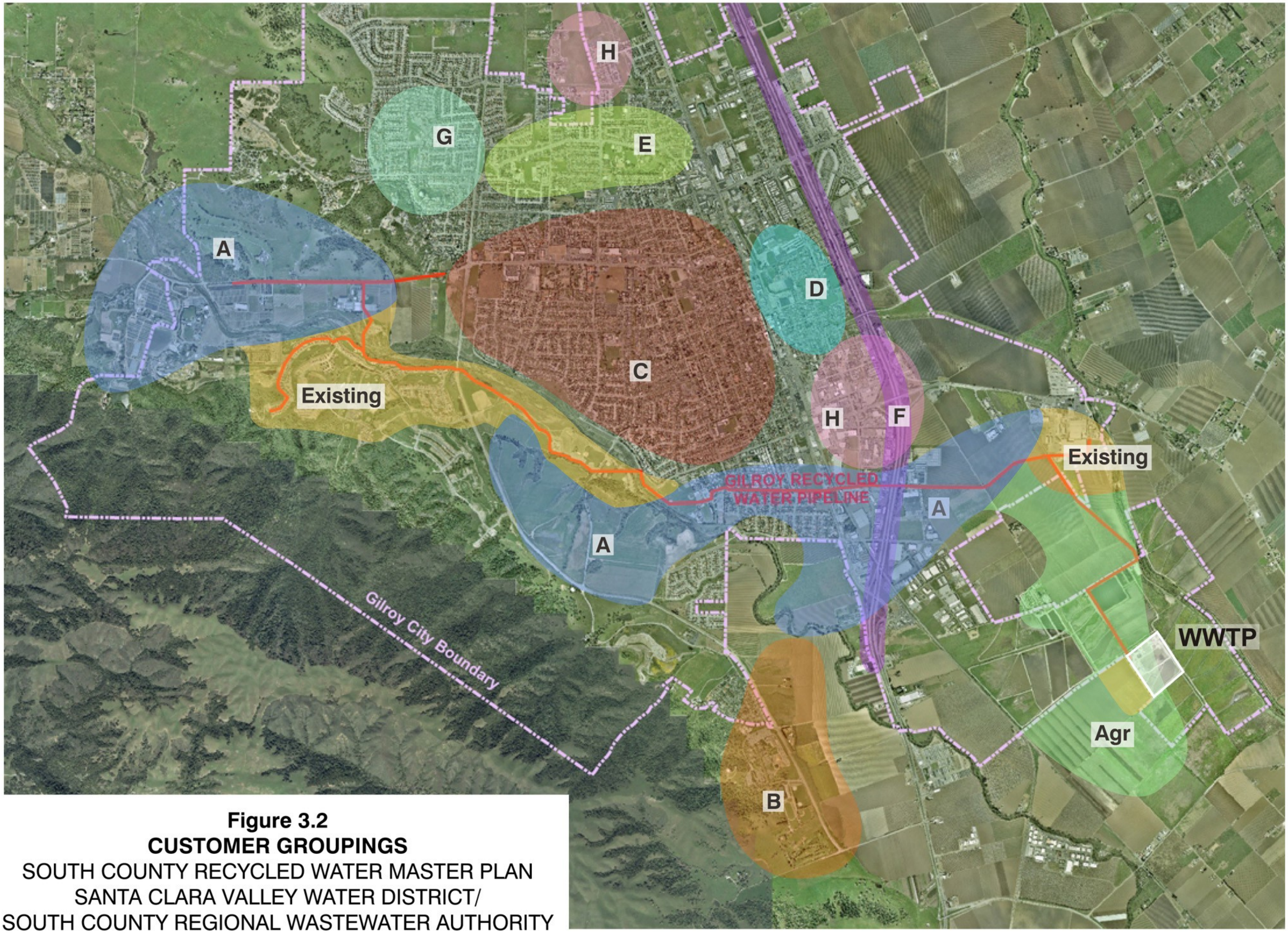


Figure 3.2
CUSTOMER GROUPINGS
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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conservative assumptions. Maximum month flow demands for irrigation sites were calculated as 20 percent of annual recycled water demand, based on evapotranspiration and rainfall data detailed in Section 2.3.2 of this report. Maximum month demands for the Cintas Laundry and Inland Packaging were estimated at 10 percent of annual recycled water demand, given the relatively constant flow demand for these industries. Maximum month demand for the Calpine Peaker Plant was based on Calpine's maximum recycled water flowrate calculation of 33 ac-ft per month. Maximum month demand for the Calpine Gilroy Power Plant was based on Calpine's estimated recycled water demand of 0.65 mgd, or 60 acre-feet per month.

Total annual recycled water demand and maximum month recycled water flow demands for each customer grouping are summarized in Table 3.2. In general, the higher priority customer groupings have a higher demand for recycled water and are located closer to the supply source (i.e. the WWTP and existing pipeline). Total estimated maximum month flow demand for all existing and potential customers is 9.9 mgd. Detailed peak flow calculations for each customer are included in Appendix B.

Table 3.2 Maximum Month Flow Demands
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Customer Group Number and Name		Total Annual Recycled Water Flow (afy)[1]	Maximum Month Demand (ac-ft/month)[2]	Maximum Month Demand (mgd)[2]
	Existing Users	711	166	1.81
A1	Minimal Capital Cost	556	113	1.23
A2	Industrial Customers	378	67	0.73
A3	Hecker Pass Customers	420	84	0.91
Agr.	Expanded Agriculture	855	171	1.86
B	Gavilan College Area	228	48	0.52
C	First Street Loop	93	27	0.29
D	I.O.O.F. Avenue Spur	65	17	0.18
E	Wren Avenue Spur	121	27	0.29
F	Highway 101	144	29	0.31
G	Mantelli Spur (Future)	33	6.6	0.07
H	Other Future Spurs	28	5.6	0.06
I	Morgan Hill	769	154	1.67
	TOTAL	**4,401**	**914**	**9.9**

Notes:
(1) Total estimated annual recycled water flow in units of acre-feet per year (afy).
(2) Maximum month demand in units of acre-feet per month (ac-ft/month) and million gallons per day (mgd).

Peak day demands were calculated using a peaking factor of 1.3 times the average daily demand of the maximum month for all customers. Peak hour demand is based on the peak day demand averaged over the defined daily use distribution, as defined by modeling assumptions in Section 3.4 - Hydraulic Modeling Analysis.

Peak hour demand will be used to size the future distribution system, including pipelines, pumping requirements, and storage requirements. Peak day and peak hour recycled water flow demands for each customer grouping are summarized in Table 3.3. Total estimated peak day demand for all existing and potential customers is 13.1 mgd, although peak flow demand may not necessarily occur simultaneously. Detailed peak flow calculations for each customer are included in Appendix B.

Table 3.3 Peak Day and Peak Hour Flow Demands
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Customer Group Number and Name		**Peak Day Demand (ac-ft/day)(1)**	**Peak Day Demand (mgd)(1)**	**Peak Hour Demand (ac-ft/hour)(2)**	**Peak Hour Demand (mgd)(2)**
	Existing Users	7.20	2.35	0.41	3.22
A1	Minimal Capital Cost	4.89	1.59	0.51	3.99
A2	Industrial Customers	3.35	1.09	0.16	1.23
A3	Hecker Pass Customers	3.64	1.19	0.45	3.56
Agr.	Expanded Agriculture	7.41	2.42	0.41	3.22
B	Gavilan College Area	2.08	0.68	0.26	2.04
C	First Street Loop	1.17	0.38	0.15	1.14
D	I.O.O.F. Avenue Spur	0.73	0.24	0.09	0.71
E	Wren Avenue Spur	1.16	0.38	0.15	1.14
F	Highway 101	1.25	0.41	0.16	1.22
G	Mantelli Spur (Future)	0.28	0.09	0.04	0.28
H	Other Future Spurs	0.24	0.08	0.03	0.24
I	Morgan Hill	6.66	2.17	0.83	6.52
	TOTAL	**40.1**	**13.1**	**3.7**	**29.3**

Notes:

(1) Peak day demand includes a peaking factor of 1.3 over maximum month demand, and is shown in units of acre-feet per day (ac-ft/day) and million gallons per day (mgd).

(2) Peak hour demand is based on the peak day demand averaged over the defined daily use distribution, as defined in by modeling assumptions in Section 3.4. Peak flow demands will not necessarily occur simultaneously for all users.

3.2.3 Seasonality and Daily Use Distribution

Recycled water customers often have varying seasonal demand. Irrigation customers have seasonal demand peaking in the warm, dry summer months. Industrial and commercial process customers have a consistent year-round demand. Additionally, daily use distribution can be customer-specific due to timing of water use, regulated irrigation-timing requirements, available storage, and other site constraints. Publicly accessible irrigation sites generally irrigate at night, when site use is minimal to nonexistent.

The daily use distribution for Eagle Ridge Development is a total of 20 hours, with pumping from 4:00 AM until midnight. The daily use distribution for Obata Farms is a total of 16 hours, with pumping from 5:00 AM until 2:00 PM and from 5:00 PM until 2:00 AM. The daily use distribution for the Calpine Peaker Plant is a constant 16-hour use period from 6:00 AM until 10:00 PM, based on calculations by Calpine for continuous maximum recycled water demand. The daily use distribution for Industrial Customers in Group A2 is a total of 10 hours, from 8:00 AM until 6:00 PM. All other customers were assumed to have a nighttime irrigation use distribution with 8 hours of use between 8:00 PM and 4:00 AM.

Figure 3.3 summarizes the daily use distribution patterns for all existing and potential customers.

Each customer's seasonality and daily use distribution of recycled water demand was characterized and is defined further in H2ONet modeling results in Section 3.4 - Hydraulic Modeling Analysis.

3.2.4 Preliminary Pipeline Alignments

Preliminary pipeline alignments to serve new recycled water customers were developed and modified based on coordination with District staff, City staff, and logistical and environmental considerations. One potential alignment was considered at the suggestion of City of Gilroy staff, namely routing the pipeline in existing flood control channel levees and service roads. Based on a staff-level policy in the District's Engineers Policy and Procedure Manual, pipeline routings within the right-of-way of wide District-owned flood control channels are not considered feasible at this time. These flood control channels are subject to modification and enlargement, and relocation of longitudinal piping could be cost prohibitive. Therefore, pipeline routings were planned primarily within City roadways.

3.2.4.1 Main Transmission Pipeline Alignment

Based on preliminary modeling results, expansion of the main transmission pipeline is necessary to serve additional customers receiving water off this line. Therefore, it will be necessary to add a parallel pipeline to the existing one or develop an additional pipeline alignment to serve as the backbone transmission system for the planned expansion. For project evaluation purposes, an initial pipeline alignment was developed to serve the identified planned customer groupings. The alignment was selected to minimize pipeline construction costs and allow phased connection of customer groupings.

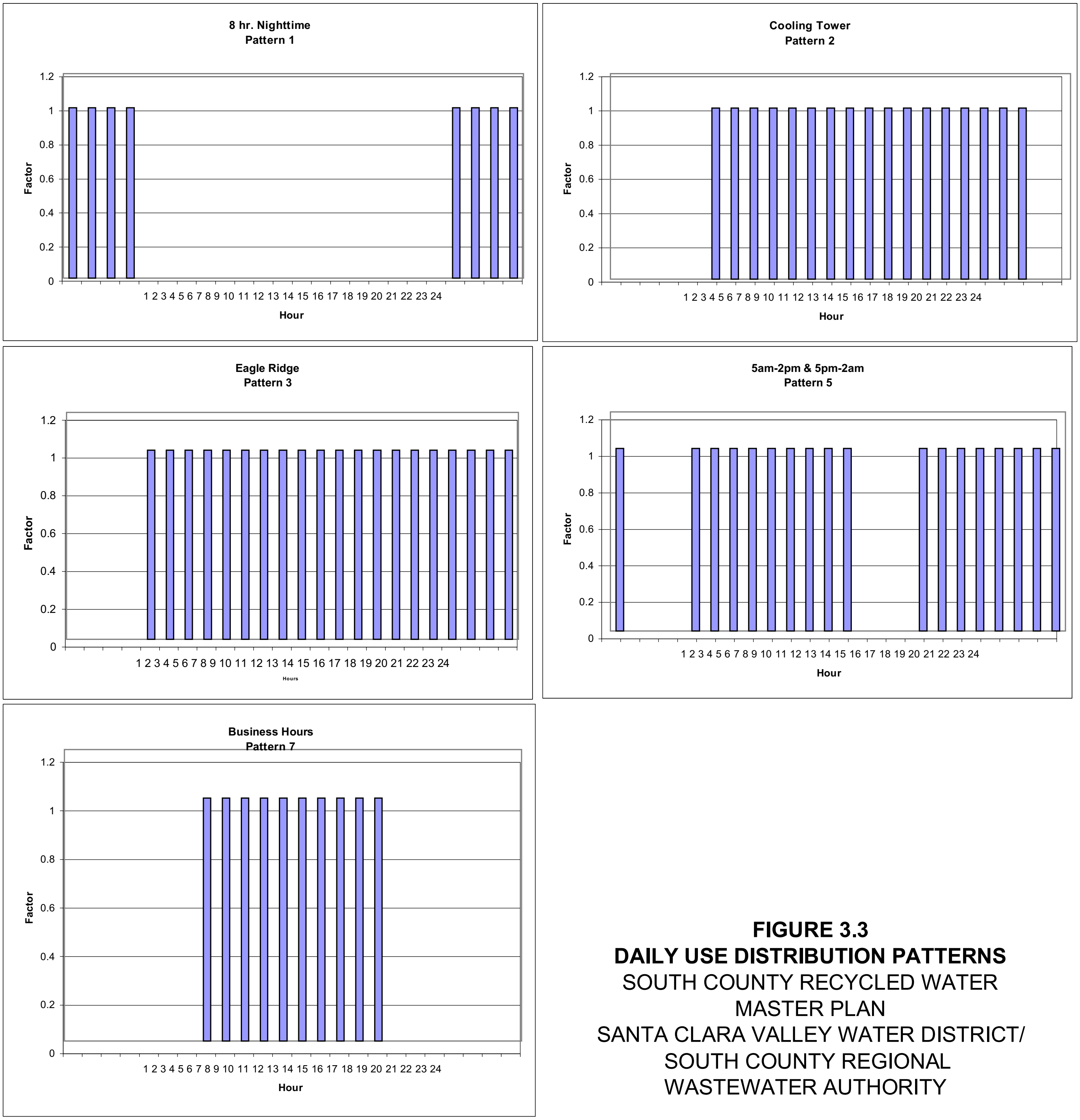


FIGURE 3.3
DAILY USE DISTRIBUTION PATTERNS
SOUTH COUNTY RECYCLED WATER
MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL
WASTEWATER AUTHORITY

Two alternatives were considered to expand the existing pipeline: 1) a parallel alignment within the same right-of-way as the existing pipe or 2) a new alignment constructed through City streets and the Glen Loma Ranch Development, to minimize construction in City streets. In either case, the existing pipeline would remain in use. The District and SCRWA jointly agreed that the parallel alignment within the existing right-of-way is infeasible, and selected the alignment constructed in City streets and through the Glen Loma Ranch Development.

Expansion of the existing pipeline west through the Eagle Ridge Golf Course, north along an easement through Goldsmith Seeds' property, and west along Hecker Pass Highway is also necessary based on modeling results. The current alignment through Eagle Ridge Golf Course and Goldsmith Seeds passes through private property, through the golf course, and under Uvas Creek. Therefore, expansion of the distribution system in this area will utilize a separate alignment, either north along Santa Teresa Boulevard and west along Hecker Pass Highway, or along surface streets in the Eagle Ridge Development and Hecker Pass Development. Potential constraints include acquisition of easements, the Uvas Creek crossing, timing of Hecker Pass Development construction, and construction within the right-of-way of Hecker Pass Highway. Final pipeline alignment will be determined during the design phase of the project. This alignment will serve expanded recycled water use of customers at the far west end of the recycled water distribution system, including Bonfante Gardens, the Gilroy Golf Course, Goldsmith Seeds, and Glen Loma Ranch Development.

3.2.4.2 Distribution Pipeline Alignments

Group A1, A2, and A3 customers are located close to the existing main transmission pipeline. Connections to the existing or expanded main pipeline will be made to serve Group A1, A2, and A3 customers. A planned pipeline routed south from the existing pipeline will serve Gilroy Sports Park. This Gilroy Sports Park pipeline is planned to be placed in the right-of-way of Monterey Street and Highway 101 Frontage Road, and is currently being planned and designed by the City of Gilroy.

Group Agr., Expanded Agriculture, is planned to be served through construction of a new pipeline directly to the west of the WWTP. This new pipeline will have a separate connection from the WWTP, not associated with the existing 12-inch diameter main pipeline serving the other customers, therefore allowing increased total recycled water use during the period before the main system is expanded. Obata Farms also has several turnouts for service along the main pipeline, which provide recycled water to additional areas of agricultural fields. These turnouts are not currently utilized due to flow capacity limitations, but could be used in the future.

Group B, Gavilan College, is planned to be served by extension of the planned pipeline to Gilroy Sports Park. The Gilroy Sports Park pipeline will be routed through the park along a proposed bicycle trail bridge across Carnadero Creek, as identified by City of Gilroy Facilities and Parks Staff. The pipeline will then follow the right-of-way of the proposed bicycle trail south to Mesa Road, where it will turn west to Santa Teresa Boulevard and then south. It is expected that the joint use and need of the potential bicycle trail right-of-way will accelerate the purchase and development of the trail and pipeline.

Group C could be served by a pipeline routed east along First Street from the existing pipeline in the right-of-way of Hecker Pass Highway. El Roble Park and El Roble Elementary School could be served by a spur routed south from First Street along Wren Avenue. A spur from the existing pipeline north along Princevalle Street could serve the Glenview Elementary and Gateway Schools.

Group D could be served by extension of the new pipeline to the east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. An alternate route could bypass in-street construction along Monterey Street by continuing east through a commercial parking lot and turning south in an existing District flood control channel until reaching I.O.O.F. Avenue.

Group E could be served by an extension of the new pipeline north along Wren Avenue and east and west along Mantelli Drive.

Group F, Highway 101 medians and interchanges, could be served by a pipeline within the median and connected to the distribution system either at the existing pipeline or at the highway crossing for any necessary expansion of the existing pipeline.

Group G could be served by an extension west along Mantelli Drive and north along Calle del Rey.

Group H could be served by separate direct extensions, one north along Wren Avenue, and a second south along Forest Street and east along Seventh Street.

Group I, Morgan Hill customers, could be served with a pipeline extension north along Monterey Street a distance of approximately 13 miles to reach the downtown area. The AIM Golf Course could be served by a pipeline from the proposed scalping plant location at the southwest corner of the intersection of Hill Road and San Pedro Avenue, a distance of approximately 1.8 miles.

3.2.4.3 Future Pipeline Alignments

An additional pipeline routed south from the WWTP to the Pajaro River is considered pending future use for agricultural recycled water supply. The purpose of the Pajaro River pipeline would be to discharge excess winter storm flows to the Pajaro River as well as distribute recycled water in summer. Recycled water use for agriculture along the Pajaro River pipeline would offset existing groundwater use. The proposed alignment for the Pajaro River discharge pipeline is south from the WWTP to Bloomfield Avenue, southwest along Bloomfield Avenue to Davidson Avenue, and southeast along Davidson Avenue to the Pajaro River, a distance of approximately 15,000 feet (3 miles). Bloomfield Avenue is the southern boundary of the SCRWA property, and the pipeline routing is entirely through

SCRWA land and public roadway right-of-way. The area south of Bloomfield Avenue is predominantly agricultural.

For distribution system reliability and to maintain a minimum water pressure, a looped system is preferable. Expansion of the main transmission pipeline would provide the benefits of a looped system. Two other potential loop connections are feasible. One feasible loop connection could be to extend the existing pipeline along Princevalle Street to meet the new pipeline along First Street. This alternative could provide service to Glenview Elementary School, Gateway School, and allow a spur along Fourth Street to serve El Roble Elementary School and El Roble Park. Another feasible loop connection could be along Chestnut Street between the existing pipeline and the spur that would serve Forest Street Park and Eliot Elementary School. These proposed pipeline loops would each require approximately a one-mile pipeline extension.

Figure 3.4 summarizes the potential pipeline alignments.

3.2.5 Initial Environmental Analysis

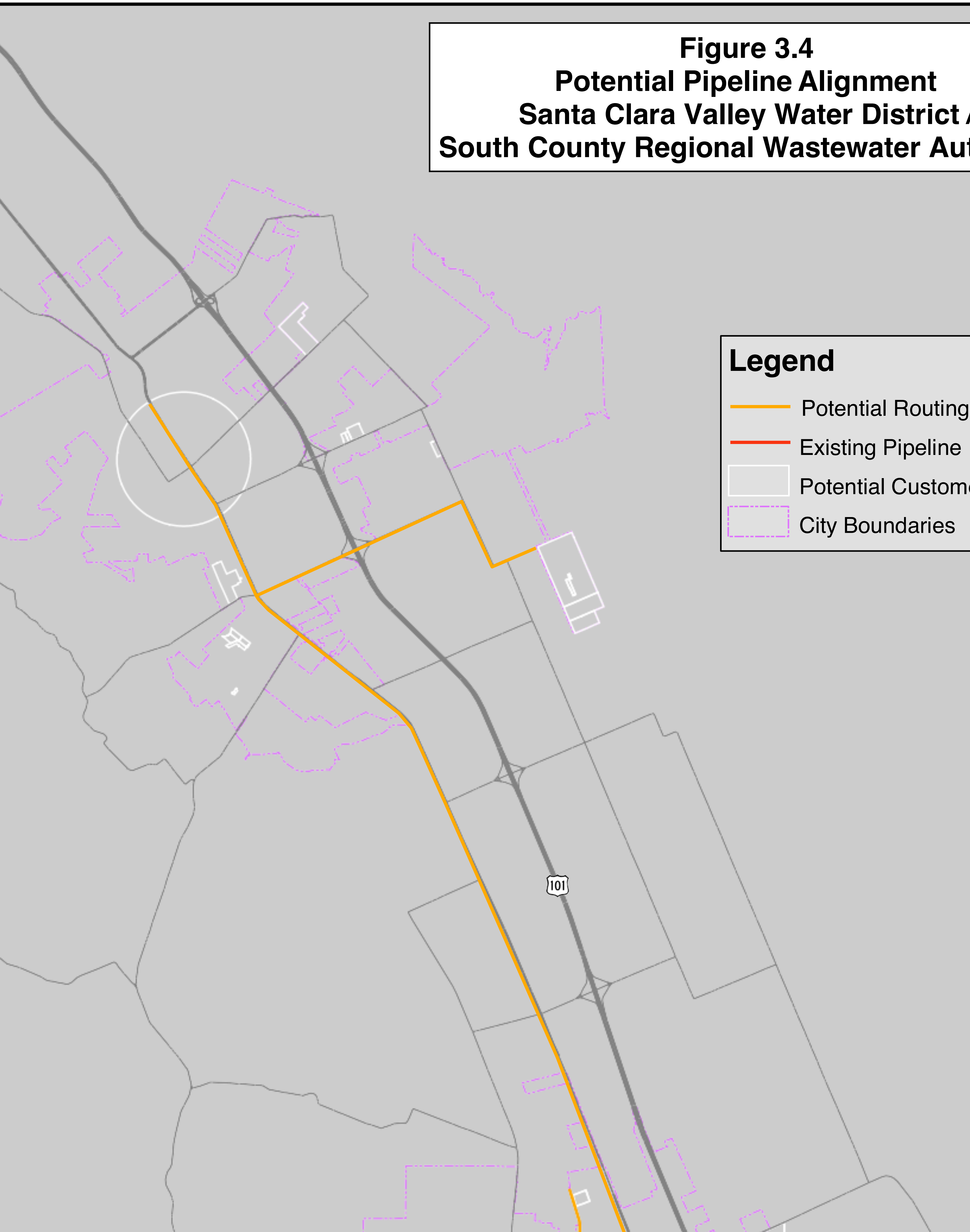
Environmental Science Associates (ESA) developed a Constraints Analysis to identify and evaluate any environmental constraints or fatal flaws that could constrain implementation of each new pipeline route. The Constraints Analysis was based on a review of pertinent background documentation, computer database searches, and reconnaissance of the pipeline routes, consisting of windshield and ground surveys using available access. Specific analysis topics included land use and land use policy, traffic and circulation, visual/aesthetic resources, biological resources, cultural resources, hazardous materials, hydrologic resources, and geology and soils.

The conclusions of the Constraints Analysis are generally positive as to the environmental feasibility of the proposed pipeline routings. The cumulative potential for environmental constraints is low to moderate for most pipeline segments. The pipeline routes with the highest identified constraints have alternate routes identified in the Master Plan that could be implemented to reduce impacts. Overall, implementation of standard construction measures has the ability to reduce potential impacts associated with the proposed pipeline routings to less than significant.

The Constraints Analysis, CEQA Checklist, and CEQA Justification Memorandum prepared by ESA are included in Appendix C.

Environmental documentation for the western farmlands pipeline will be included as part of a separate CEQA document for the SCRWA WWTP expansion. Environmental documentation for the Pajaro River pipeline will also be a separate CEQA process.

Figure 3.4
Potential Pipeline Alignment
Santa Clara Valley Water District
South County Regional Wastewater Aut



3.3 PRELIMINARY ALTERNATIVES EVALUATION

The preliminary project alternatives were evaluated through the Stage II screening process based on screening criteria including peak flow demands, initial pipeline alignment, cost effectiveness, preliminary hydraulic analysis, and initial environmental constraints. The goal of the evaluation was to optimize the projects for maximum recycled water usage at a minimum cost. The evaluation further prioritized the projects, allowing development of immediate-term, short-term, and long-term capital improvement programs.

3.3.1 Customer Grouping Summary

A table has been prepared summarizing the advantages and disadvantages of each customer grouping. This summary information is presented in Table 3.4.

Table 3.4 Customer Grouping Analysis – Stage II Screening
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Potential Customer Group		Advantages	Disadvantages
A1	Minimal Capital Cost	• Close to existing pipeline • Can connect quickly	• Potential retrofit costs at Gilroy High School
A2	Industrial Customers	• Achieves variety of uses • Year-round demand	• 2 of 3 customers have small demand
A3	Hecker Pass Customers	• Large demand • High-profile customers	• Perceived quality concerns
Agr.	Expanded Agriculture	• Very large demand; can vary to meet supply • Can connect quickly • Use could allow SCRWA pond drying flexibility • Lowest cost to connect	• Uncertainty of implementation • Rate charged for agricultural use of recycled water is lower
B	Gavilan College Area	• Large demand • Dual-use right-of-way with bike path	• Potential extensive on-campus retrofits
C	First Street Loop	• Numerous small city users • Distribution loop	• High cost/return ratio
D	I.O.O.F. Avenue Spur	• Numerous small city users	• High cost/return ratio
E	Wren Avenue Spur	• Numerous small city users • Las Animas Park use	• High cost/return ratio
F	Highway 101	• Relatively large demand	• Need CalTrans maintenance support
G	Mantelli Spur	• Potential for expansion to future customers in area	• High cost/return ratio
H	Other Future Spurs	• Potential distribution loop	• High cost/return ratio
I	Morgan Hill	• Involves Morgan Hill with recycled water project	• High cost/return ratio

3.3.2 Projects Selected for Implementation

The evaluation of preliminary alternatives (Stage II screening) resulted in the selection of several customer groupings for implementation in the Master Plan. Projects were discussed and selected during a progress meeting with representatives of SCRWA, the District, and the City of Gilroy. The Stage II screening and selection process emphasized cost effectiveness and recycled water demand, while minimizing necessary distribution system expansion. The projects selected for implementation at this time include customer groupings A1, A2, A3, Agr., and B. These projects are discussed in more detail in Chapter 4. The selected projects have an estimated annual recycled water usage of 3,149 afy, more than quadruple the existing customers' recycled water use of 711 afy. Customer groupings C through I will be retained for potential future implementation as circumstances warrant.

3.3.3 Projects Not Selected for Implementation

The evaluation of all analyzed projects determined that customer groupings C through I were not selected for implementation in the Master Plan. Further explanation for excluding these projects is presented below.

3.3.3.1 Gilroy Projects not Selected

Customer groups C, D, E, G, and H consist of numerous small landscape irrigation customers spread throughout the established City of Gilroy downtown area. These customers would require an extensive distribution network constructed within the right-of-way of existing city streets, causing disruption and delays to city residents. Based on preliminary hydraulic modeling analysis, a minimum of 40,000 linear feet (LF) of 12-inch diameter pipeline would be necessary to distribute recycled water to these customers. At an estimated cost of $200/LF, the project cost for transmission pipeline alone is estimated to exceed $8,000,000. With a total annual recycled water demand of 339 afy, there is not sufficient recycled water demand to offset the costs of distribution. Therefore, customer groups C, D, E, G, and H were not selected for further study or implementation at this time.

Customer group F consists of landscape irrigation of Highway 101 medians and interchanges. As the medians are not currently irrigated, minimal CalTrans maintenance is required. Irrigation with recycled water would require maintenance by either CalTrans or the City of Gilroy, neither of which are prepared to do so at this time. In addition, recycled water use in this manner would not offset existing potable water use. Based on preliminary hydraulic modeling analysis, a minimum of 22,000 LF of 4-inch diameter pipeline would be necessary to distribute recycled water to this customer. At an estimated cost of $150/LF, the project cost for the transmission pipeline alone is estimated to exceed $3,300,000. With a total annual recycled water demand of 144 afy, there is not sufficient recycled water demand to offset the costs of distribution. Therefore, customer group F was not selected for further study or implementation at this time.

3.3.3.2 Morgan Hill Projects not Selected

Customer group I consists of two separate project alternatives. The first alternative is recycled water use at 20 identified sites in downtown Morgan Hill, supplied via a transmission pipeline from Gilroy. Approximately 70,000 feet of 12-inch diameter transmission pipeline would be necessary. At an estimated cost of $200/LF, the project cost for the transmission pipeline alone is estimated to exceed $14,000,000. With a total annual recycled water demand of 389 afy, there is not sufficient recycled water demand to offset the costs of distribution. Alternatively, a transmission pipeline from Gilroy could serve both downtown Morgan Hill customers and the AIM/Fry's Golf Course. This option would require approximately 70,000 feet of 24-inch diameter transmission pipeline and approximately 15,000 feet of 12-inch diameter distribution pipeline. A cost estimate was prepared in a preliminary manner for this alternative, similar to those prepared for the implemented projects in the Master Plan and is included in Appendix D. The recycled water delivery costs would be approximately $2,500 per acre-foot, an extremely high value compared to those of the selected projects. Therefore, a lengthy pipeline to serve downtown Morgan Hill customers is not selected for further study or implementation at this time.

The second Morgan Hill alternative is recycled water use solely at the AIM/Fry's Golf Course. Based on direction of the District, City of Gilroy, and City of Morgan Hill, this alternative was based on development of a scalping plant near the golf course. Membrane bioreactor (MBR) treatment would be the preferred treatment technology for the scalping facility due to effective water quality treatment, proven use, and small footprint. MBR is an emerging and promising technology for producing tertiary quality recycled water at a satellite scalping facility. The MBR process combines biological treatment with membrane separation to ensure compliance with unrestricted tertiary recycled water regulations. MBR treatment includes influent screening and grit removal, influent pumping, biological treatment, membrane filtration, and disinfection. All treatment processes are incorporated into a package facility located on a small footprint. Residual solids would be returned to the collection system for treatment at the SCRWA WWTP.

The location of the golf course at the fringe of developed Morgan Hill limits the potential locations for a scalping plant, which requires scalping a significant influent wastewater flow from the collection system. A scalping plant location at the southwest corner of the intersection of Hill Road and San Pedro Avenue was assessed. A wastewater flow of 300,000 gallons per day (gpd) was assumed available at this location, per Jim Ashcraft of the City of Morgan Hill. More detailed analysis of diurnal collection system flow was not conducted at this time, however in addition to meeting diurnal flow demands of the customer, sufficient flow must remain in the system to carry residual solids.

As the golf course has an estimated maximum month demand of 76 ac-ft, or 830,000 gpd, insufficient flow is available to meet the entire demand. This project would require approximately 9,500 feet of minimum 6-inch diameter pipeline, an MBR scalping plant to meet recycled water quality requirements, and treated water storage to meet diurnal fluctuations in flow demand. Implementation of this alternative would result in reduced flows and increased loadings at the SCRWA WWTP equivalent to that treated by the scalping plant. At this time, this alternative is not selected for further study or implementation due to the fatal flaw of insufficient recycled water supply. However future conditions, such as increased feasibility of MBR treatment or customer demand for water supply, may warrant renewed evaluation and implementation.

Additional recycled water use from a potential southern Pajaro River pipeline is not incorporated in this Master Plan. Upon commencement of planning and design of this pipeline, which may not occur for several years, recycled water use along the proposed alignment should be considered.

All information for these analyzed projects not selected for implementation remains in the Master Plan for potential future use should conditions change. Hydraulic modeling analysis of these alternatives is included in the H2ONET model files.

RECOMMENDED CAPITAL IMPROVEMENT PROGRAM

The projects selected for implementation at this time include customer groupings A1, A2, A3, Agr., and B. The specific customers are defined in Table 4.3. The selected projects have an estimated annual recycled water usage of 3,149 afy, more than quadruple the existing customers' recycled water use of 711 afy. The remaining sections of the Master Plan focus on the phased implementation of the selected projects.

4.1 DESIGN APPROACH

The design approach for the capital improvement program includes design criteria for the sizing of main lines and laterals, storage tank capacity, pump station sizing, and system pressure requirements. Design criteria utilized for this project are based on requirements of the projects selected for implementation, and are summarized in Table 4.1. These design criteria form the basis of the hydraulic modeling analysis, which is discussed in Section 4.2.

Table 4.1 Design Criteria for Recycled Water Distribution System
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Design Parameter	Value	Units
Total Customers	20	-
Flow - Average Annual Demand	2.8 / 3,149	mgd / acre-feet per year
Flow - Maximum Month Demand	7.1 / 649	mgd / acre-feet per month
Flow - Peak Day Demand	9.3 / 29	mgd / acre-feet per day
Flow - Peak Hour Demand	12,536	gallons per minute (gpm)
Minimum Distribution System Pressure	40	pounds per square inch (psi)
Maximum Distribution System Velocity	10	feet per second (fps)
Maximum Head Loss per 1000 feet of Pipeline	10	feet per 1000 feet
Approximate Total Pipeline Length	19	miles
SCRWA WWTP Onsite Storage Required	6	million gallons

4.2 HYDRAULIC MODELING ANALYSIS

Hydraulic network analysis is a powerful tool used in all aspects of water distribution planning, design, operation, management, emergency response, system reliability analysis, fire flow capacity evaluation, as well as water quality simulations. The recycled water hydraulic model was developed to evaluate the adequacy of the existing distribution system and in planning future recycled water facilities. The model analyzes the overall hydraulic capacity of the recycled water distribution system, based on a general layout of distribution piping and customer diversions. Minor modifications or changes to the pipeline alignment will not significantly affect the model results.

The analysis initially included all quantified potential customers, but only includes projects identified for implementation for final analysis and determination of required distribution facilities. Based on ongoing development of potential recycled water customers, the Calpine Gilroy Power Plant was added after completion of the hydraulic modeling analysis. The Calpine Gilroy Power Plant is an important and feasible potential customer, and serving this customer recycled water will affect the hydraulic capacity of the existing and proposed distribution system. As with any plan, changes are to be expected. However, prior to design of the main transmission pipeline, it is advisable to expand the hydraulic model to include this customer and any other new customers identified in the intervening period. Documentation of model analysis for distribution to all analyzed projects is included in the H2ONET model. This section briefly discusses the analysis, assumptions, and results.

4.2.1 Elements of the Hydraulic Model

The recycled water hydraulic model combines information on the physical and operational characteristics of the water system, and performs calculations to solve a series of mathematical equations to simulate flows in pipes and pressures at nodes. Elements comprising the computer modeling process are: digitizing the water system, defining pipes and nodes, and allocating water demands.

In order to clarify discussion of the modeling results, the existing and proposed system was divided into Segments numbered 1 through 13. The alignment of the main transmission pipeline expansion will be via City streets and through the Glen Loma Ranch Development. The pipeline segments utilized for modeling purposes are summarized on Figure 4.1 and defined below:

- Segment 1 (Existing): East on Southside Drive then north to Calpine diversion, then west to Monterey Road
- Segment 2 (Existing): From Monterey Road to booster pump station
- Segment 3 (Existing): From booster pump station to Eagle Ridge diversion
- Segment 4 (Existing): From Eagle Ridge diversion to Hoylake Storage Tank
- Segment 5 (Existing): Eagle Ridge diversion, north to Hecker Pass Highway then west to Gilroy Golf Course
- Segment 6 (Proposed): Monterey Road south to Gilroy Sports Park
- Segment 7 (Proposed): From Gilroy Sports Park, then parallel bike trail right-of-way to Gavilan College.
- Segment 8 (Proposed): From WWTP southwest, then south to Obata Farms diversion

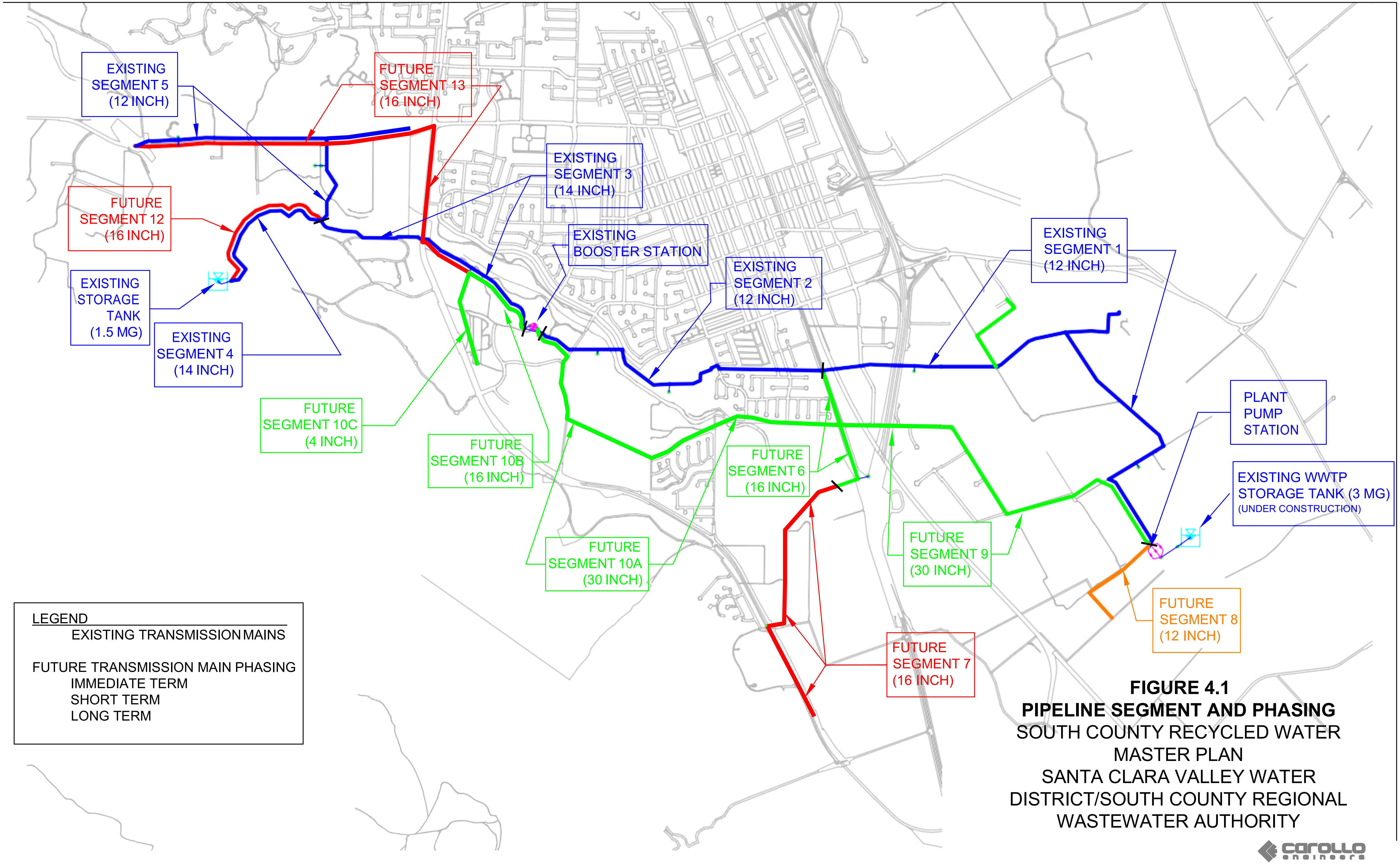

EXISTING SEGMENT 5 (12 INCH)
FUTURE SEGMENT 13 (16 INCH)
EXISTING SEGMENT 3 (14 INCH)
FUTURE SEGMENT 12 (16 INCH)
EXISTING BOOSTER STATION
EXISTING SEGMENT 1 (12 INCH)
EXISTING SEGMENT 2 (12 INCH)
EXISTING STORAGE TANK (1.5 MG)
EXISTING SEGMENT 4 (14 INCH)
PLANT PUMP STATION
FUTURE SEGMENT 10C (4 INCH)
FUTURE SEGMENT 10B (16 INCH)
FUTURE SEGMENT 6 (16 INCH)
EXISTING WWTP STORAGE TANK (3 MG) (UNDER CONSTRUCTION)
FUTURE SEGMENT 10A (30 INCH)
FUTURE SEGMENT 9 (30 INCH)
FUTURE SEGMENT 8 (12 INCH)
FUTURE SEGMENT 7 (16 INCH)
LEGEND
EXISTING TRANSMISSION MAINS
FUTURE TRANSMISSION MAIN PHASING
IMMEDIATE TERM
SHORT TERM
LONG TERM

FIGURE 4.1
PIPELINE SEGMENT AND PHASING
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

- Segment 9 (Proposed): From WWTP west along Southside Drive
- Segment 10 (Proposed): Along Luchessa through Glen Loma Ranch
- Segment 11 (Proposed): Through Glen Loma Ranch
- Segment 12 (Proposed): Parallel Segment 4
- Segment 13 (Proposed): Parallel Segment 5

4.2.2 Analysis Criteria and Assumptions

The recycled water system was evaluated using a 72-hour extended period simulation (EPS) analysis and the results were based on the analysis and design criteria listed in this section and discussed by the American Water Works Association's Distribution Network Analysis for Water Utilities Manual, AWWA M32. The criteria included service pressures, transmission main velocities, and headloss. In general, service pressures were maintained greater than 40 pounds per square inch (psi), maximum transmission main velocities were kept below 10 feet per second (fps) and head loss per 1000 feet of transmission main was kept below 10 feet.

Model demands were based on peak hour demands for selected projects from Table 3.3. Five diurnal patterns were applied to the demands, which identify daily use distribution for each customer. The daily use distributions are summarized in Figure 3.3.

The assumptions made during the analysis of the recycled water distribution system are briefly discussed below. Six million gallons per day (4,166 gallons per minute [gpm]) can be diverted from the WWTP to the recycled water distribution system. The modeled flow from the WWTP was regulated not to exceed 4,166 gpm during all simulations. All future scenarios included the addition of 3.0 million gallons (MG) of storage currently under construction at the WWTP, and an additional 3.0 MG (for a total of 6.0 MG) was added to the storage capacity at the WWTP for the full build out scenario.

4.2.3 Analysis Scenarios

Multiple scenarios were established in order to evaluate the recycled water system from the current system to build out. Five scenarios were identified; the first is for the existing system and the other four include various additional phases of system development. The future scenarios are based on the phased addition of customer groupings. Scenarios 1 and 2 depict the immediate-term CIP, Scenarios 3 and 4 depict the short-term CIP, and Scenario 5 depicts the long-term CIP.

Baseline Scenario/Scenario 1

In this scenarios, the existing system includes Segments 1 through 5 and has a current demand of 2,237 gpm. The existing users include Christmas Hill Park, the Eagle Ridge Development, the Calpine Peaker Plant, and Obata Farms near the WWTP. The Baseline Scenario models the existing system without any improvements. Scenario 1 models the existing system demands, with facility improvements made in order to satisfy the analysis criteria presented above.

Scenario 2

Scenario 2 consists of the existing system plus the addition of local farmland irrigation at Obata Farms for the expanded area to the southwest of the WWTP. The Obata farms demand adds 2,237 gallons per minute (gpm) to the base demand. This scenario utilizes a new distribution pipeline (Segment 8), which runs west from the WWTP approximately 3,000 feet to the Obata Farms diversion.

Scenario 3

Scenario 3 adds to the Scenario 2 demands by including demand group A1. Group A1 increases the existing system demand by a total of 5,559 gpm. Group A1 includes the Gilroy Sports Park, Gilroy High School, Ascencion Solorsano Middle School, the Gilroy Golf Course, and the Glen Loma Ranch Development. These additions resulted in the need to add Segment 6. Segment 6 runs south on Monterey Rd. to the Gilroy Sports Park.

Scenario 4

Scenario 4 adds Demand Group A2 and A3, not including the Calpine Gilroy Power Plant. These 2 groups add an additional 8,198 gpm to the existing system demands. 2,471 gpm of this is located at Bonfante Gardens, Goldsmith Seeds facilities, and the Hecker Pass Development located on the western portion of the system near Hecker Pass Highway (Segment 5). The remaining demand is attributed to the Cintas Laundry and the Inland Packaging facility in the eastern portion of the system off Segment 1.

Scenario 5

The fifth scenario includes a new transmission main running south from Segment 6. This new segment, Segment 7, connects the demands from Group B, an additional 1,414 gpm and includes Gavilan College, Gavilan Sports Park and Gavilan Golf Course.

4.2.4 Analysis Results

The results of the modeling analysis for this project are presented in Table 4.2, which is divided into five sections. The first section, Modeling Scenarios, defines each analysis scenario used in the model. The second section, Supply, indicates the available flow from the WWTP that can be diverted to the recycled water distribution system. The third section, Demands, indicates the demand groups that are allocated to each scenario and the additional and total demands allocated in each scenario. The fourth section, Facility Improvements, details the proposed improvements needed in order to meet the established modeling criteria discussed above. The proposed improvements include pumping capacity, storage capacity, and pipeline sizing. The last section, Model Results, gives the analysis results and indicates the maximum and minimum pressures, maximum velocities, and

TABLE 4.2

Hydraulic Modeling Results
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Modeling Scenarios	Supply		Demands			Facility Improvements																	Model Results		
						Pump and Storage Improvements				Transmission Main Improvements[3]															
	Recycled Water Flow		Demand Group	Maximum Day Demand	Peak Hour Demand	Plant Pump Station Capacity[1]	Booster Station Capacity[2]	Storage Volume		Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6	Segment 7	Segment 8	Segment 9	Segment 10	Segment 11	Segment 12	Segment 13	Pressures	Maximum Velocities	Maximum Headloss
								Hoylake	WWTP																
	(gpm)	(mgd)		(gpm)	(gpm)	(gpm)	(gpm)	(MG)	(MG)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(psi)	(fps)	(HL/1000ft)
Baseline Scenario																									
Existing System	4,166	6.0	Existing	1,631	2,237	3,100	3,475	1.5	0	12	12	14	14	12	None	None	None	None	None	None	None	None	-29 to 136	6.8	24.1
Scenario 1 (Immediate Term)																									
Baseline Scenario	4,166	6.0	Existing	0	0	0	0	0	3.0									16	16						
Proposed System				1,631	2,237	3,100	3,475	1.5	3.0									16	16				54 - 101	6.7	6.3
Scenario 2 (Immediate Term)																									
Baseline Scenario + Agricultural Demands.	4,166	6.0	Existing + Agr	1,678	2,237	1,200	0	0	3.0								12	18	18						
Proposed System				3,309	4,474	4,300	3,475	1.5	3.0								12	18	18				41 - 85	7.5	9.3
Scenario 3 (Short Term)																									
Baseline Scenario + Agricultural, and Group A1 Demands.	4,166	6.0	Existing + Agr, A1	2,785	5,559	4,100	0	0.0	3.0						16		12	20	20	12	12				
Proposed System				4,416	7,796	7,200	3,475	1.5	3.0						16		12	20	20	12	12		41 - 95	6.4	9.3
Scenario 4 (Short Term)																									
Baseline Scenario + Agricultural, and Group A1, A2, A3 Demands.	7,638	11.0	Existing + Agr, A1, A2, A3	3,679	8,198	5,300	0	0.0	3.0						16		12	24	24	16	16	16			
Proposed System				5,310	10,435	8,400	3,475	1.5	6.0						16		12	24	24	16	16	16	44 - 94	6.4	9.3
Scenario 5 (Long Term)																									
Baseline Scenario + Agricultural, and Group A1, A2, A3, B Demands.	7,638	11.0	Existing + Agr, A1, A2, A3, B	4,150	9,612	6,500	1,300	0.0	3.0						16	16	12	30	30	16	16	16			
Proposed System				5,781	11,849	9,600	4,775	1.5	6.0						16	16	12	30	30	16	16	16	41 - 86	7.6	9.8

Notes:
1. Includes one 1,200 gpm standby pump.
2. Includes one 875 gpm standby pump
3. Segment Descriptions
    - Segment 1: East on Southside Drive then north to Calpine diversion, then west to Monterey Road.
    - Segment 2: From Monterey Road to Booster Station
    - Segment 3: From Booster Station to Eagle Ridge diversion
    - Segment 4: From Eagle Ridge diversion to Hoylake Storage Tank
    - Segment 5: Eagle Ridge diversion, north to Hwy 152 then west to Gilroy Golf
    - Segment 6: Monterey Road south to Gilroy Sports Park
    - Segment 7: From Gilroy Sports Park, then parallel bike trail right-of-way to Gavilan College.
    - Segment 8: From WWTP southwest, then south to Obata Farms diversion.
    - Segment 9: Parallel Segment 1
    - Segment 10: Parallel Segment 2
    - Segment 11: Parallel Segment 3
    - Segment 12: Parallel Segment 4
    - Segment 13: Parallel Segment 5

maximum headloss for each scenario. The proposed recycled water distribution system improvements are summarized in Figure 4.2.

As can be seen in Table 4.2, the existing system has insufficient capacity for existing peak hour demands, as shown by the negative pressure developed in the baseline scenario. Customer experience with low pressure in the distribution system upstream of the booster pump station shows that this model result is correct. Modeling the addition of all selected customer groups shows that the existing distribution system is insufficient to meet peak demands, requiring increases in WWTP pumping capacity, booster pump station capacity, reservoir storage, and pipe sizing. Many of the largest proposed customers are located at the far western end of the distribution system, resulting in the necessary system expansion.

4.3 CAPITAL IMPROVEMENT PROGRAM

The capital improvement program (CIP) for the South County Recycled Water Master Plan is planned in three phases. The phasing of individual projects and development of the immediate-term, short-term, and long-term CIP is discussed below.

4.3.1 Project Phasing

A preliminary comparison of recycled water production and potential customer connection phasing was developed (i.e.: recycled water supply versus demand). For this assessment, the planned expansion of tertiary filtration at SCRWA to increase recycled water production capacity to 6 mgd was assumed to be complete and operational by the end of 2005. Recycled water usage was based on the estimated maximum month usage to ensure sufficient recycled water production to meet demand, given limited existing storage. Existing customer maximum month demand of 1.8 mgd was used as a baseline recycled water usage, with each additional customer grouping adding cumulatively.

Each customer grouping was added as a phased connection at a feasible future date. The estimated date of connection for each customer grouping is preliminary and may be changed due to implementation factors, environmental requirements, or due to other circumstances. Design of SCRWA WWTP tertiary facilities expansion to 6 mgd tertiary recycled water capacity, including pump stations, reservoir storage, and the agricultural fields' pipeline is ongoing and construction is expected to be complete by the end of 2005. Construction of the pipeline to agricultural fields to the west of the plant will allow increased recycled water use by local farmland by 2006. At this time, it is estimated that Group A1 and Calpine Gilroy Power Plant usage will be added in 2007. Recycled water use at the Gilroy Sports Park and Glen Loma Ranch Development will not begin until construction of the projects. It is estimated that connections will occur for Group A2 excluding Calpine Gilroy Power Plant in 2009. Groups A3 and B are planned to be connected in 2010 or beyond. Increased agricultural usage at local farmlands, including Obata Farms, could supplement recycled water usage that is less than production capacity.

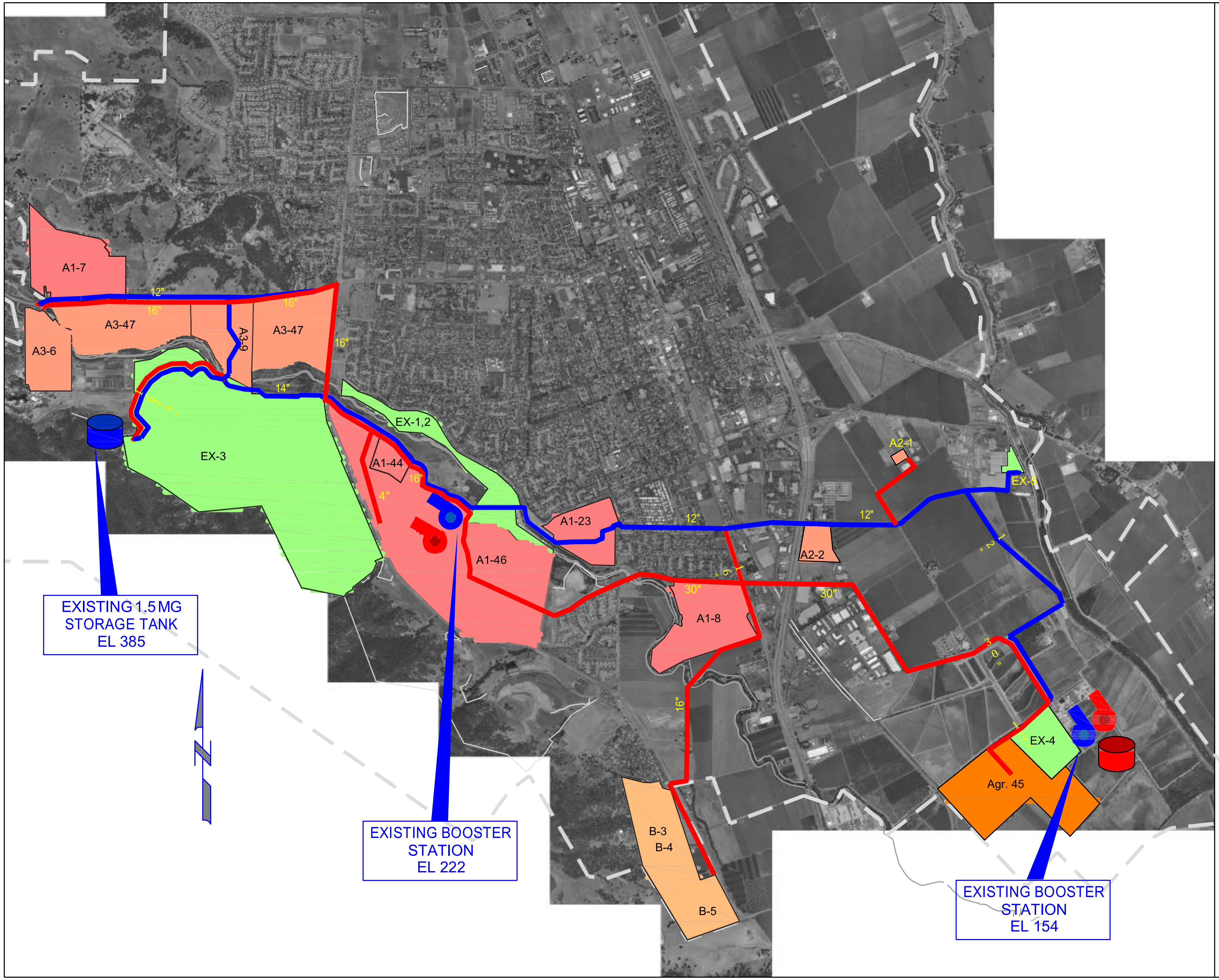


FIGURE 4.2
PROPOSED RECYCLED WATER DISTRIBUTION SYSTEM
SOUTH COUNTY
RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL
WASTEWATER AUTHORITY

Groups A1, A2, A3, and increased agricultural use are independent of other project groups. Group B relies on the planned expansion of the recycled water distribution pipeline through Gilroy Sports Park, part of Group A1.

Table 4.3 summarizes the customers planned to be connected to the distribution system in each phase of the Capital Improvement Program.

Table 4.3 Capital Improvement Program Summary
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Capital Improvement Program Phase	Time Period	Customers Included	Total Number of Customers	Average Annual Demand (afy)
Existing Customers	--	Existing	5	711
Immediate-Term	One Year	Agr.: Local Farmlands	6	1,566
Short-Term	Five Years	A1, A2: Gilroy High, Ascencion Solorsano Middle, Gilroy Golf Course, Gilroy Sports Park, Glen Loma Ranch Development, Cintas Laundry, Inland Packaging, Calpine Gilroy Power Plant	14	2,501
Long-Term(1)	More than Five Years	A3, B: Goldsmith Seeds, Bonfante Gardens, Hecker Pass Development, Gavilan College, Gavilan Sports Park, Gavilan Golf Course	20	3,149

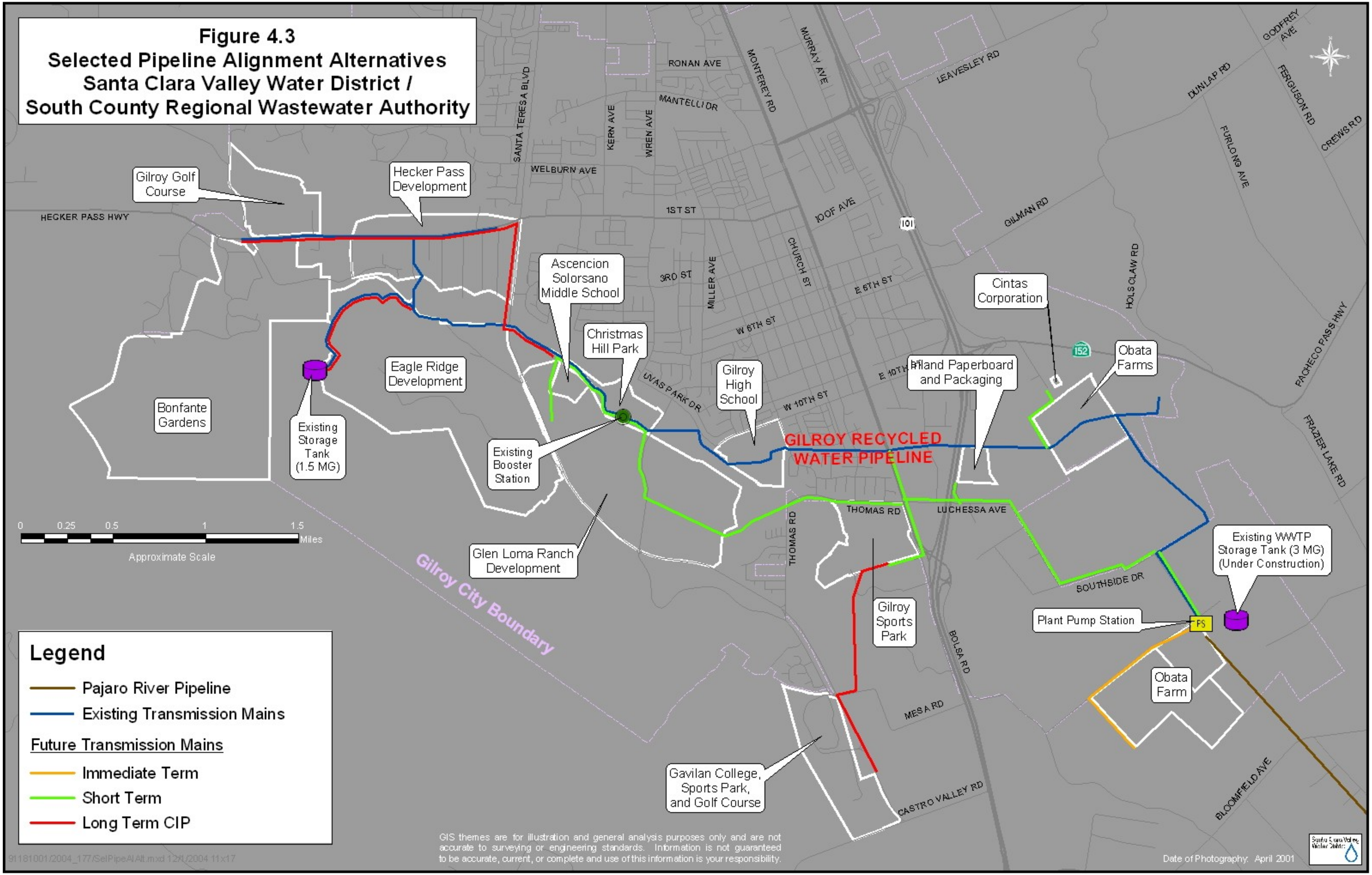
Notes:

(1) The Capital Improvement Program includes projects selected for implementation. Additional identified customers, expanded agricultural use to the south of the WWTP, and recycled water use in the Morgan Hill area could be added to the Master Plan as future conditions dictate.

Figure 4.3 summarizes the pipeline alignment selected for implementation. Final selection of the alignment for the main transmission pipeline expansion will be conducted during predesign. Alignments to serve selected customers are as defined in Section 3.2.4 of this report.

Figure 4.4 summarizes the conceptual project connection phasing, in relation to recycled water supply and demand. As shown on Figure 4.4, implementation of Groups A3 and B

Figure 4.3
Selected Pipeline Alignment Alternatives
Santa Clara Valley Water District / South County Regional Wastewater Authority



GIS themes are for illustration and general analysis purposes only and are not accurate to surveying or engineering standards. Information is not guaranteed to be accurate, current, or complete and use of this information is your responsibility.

Date of Photography: April 2001

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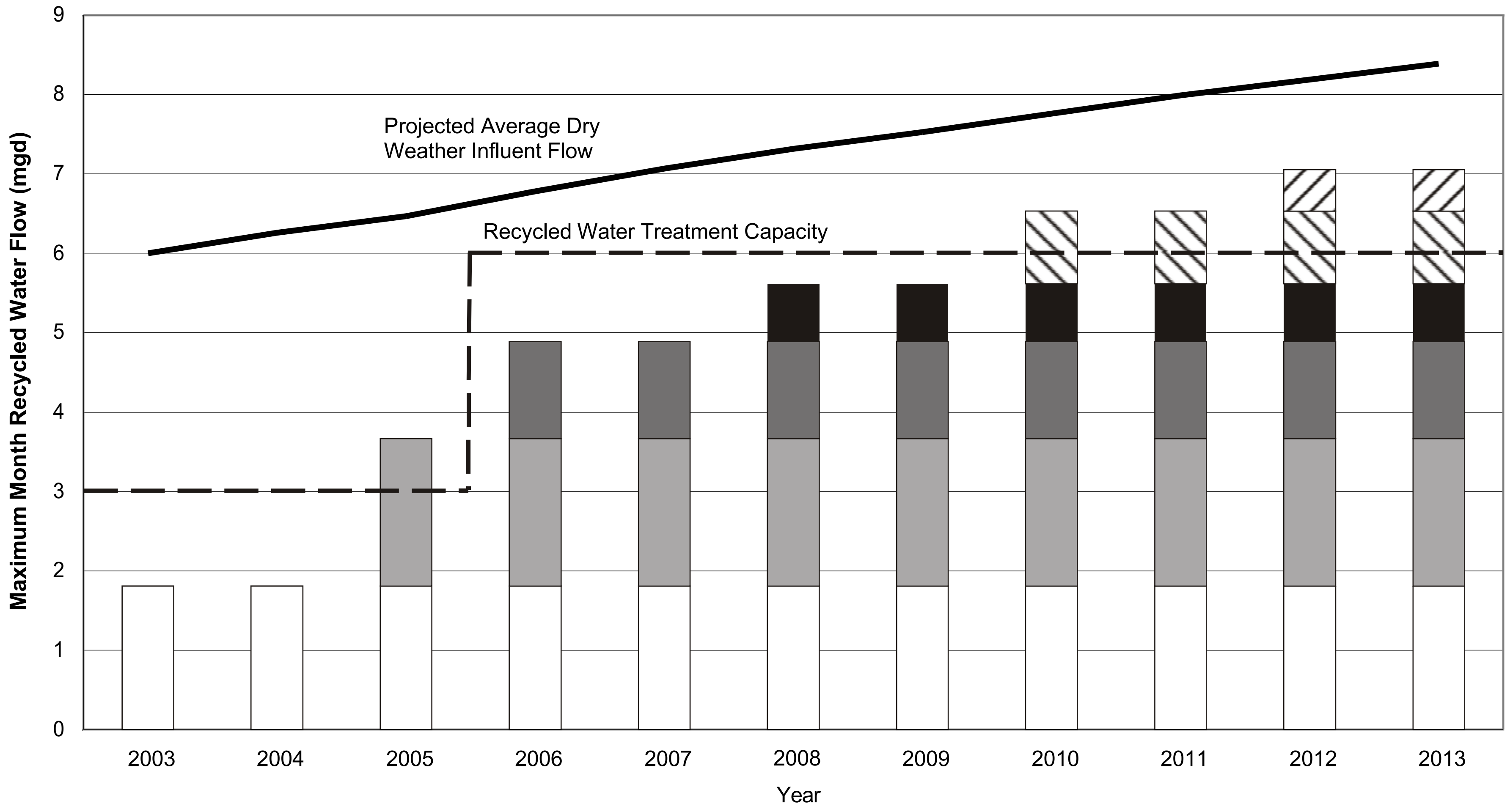


Figure 4.4

CONNECTION PHASING - MAXIMUM MONTH FLOWRATES

SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

exceeds the treatment capacity of 6 mgd. During planning for implementation of this additional use, recycled water use in the interim should be reviewed and tracked to assess recycled water supply capacity. Treatment capacity could be expanded as necessary, or customer agreements signed with agricultural users could grant priority to other customers that rely solely on recycled water.

4.3.2 Immediate-Term Capital Improvement Program

Based on the results of the Stage II screening, Group Agr. was identified to be included as the recommended immediate-term CIP. Increasing recycled water use for local farmlands near the SCRWA WWTP is the most feasible project and implementation can begin within the next year. One of the main reasons this customer can be added immediately is because a separate distribution pipeline will serve the area. In other words, this user is not dependent on upsizing the existing distribution system.

The immediate term CIP includes construction of a separate distribution pipeline to serve agricultural fields to the west of the WWTP to increase capacity to serve recycled water to Obata Farms. The pipeline will be routed west and then south through agricultural fields adjacent to the WWTP. Based on modeling results, the pipeline will be sized at 12-inch diameter and have a total length of 3,000 feet.

Also included as part of the immediate-term CIP will be retrofitting and rehabilitation of the existing Hecker Pass pipeline. The pipeline segment north through Goldsmith Seeds property and west along Hecker Pass Highway was not retrofitted as part of the previous retrofit project to rehabilitate the main transmission pipeline. Retrofit during the immediate-term CIP will allow recycled water to be delivered to the Gilroy Golf Course and other Hecker Pass area customers pending expansion of the main pipeline in the short-term CIP.

The immediate-term CIP also requires the completion of a 3 million gallon storage reservoir and an additional 3 mgd of distribution pumping capacity at the SCRWA WWTP. Onsite storage and distribution pumping at the WWTP are being designed and constructed under a separate project, with the CEQA, design, and construction the responsibility of SCRWA.

4.3.3 Short-Term Capital Improvement Program

Based on the results of the Stage II screening, Groups A1 and A2 (i.e., Minimal Capital Cost and Industrial Customers groups) were identified to be included as the recommended short-term CIP. These projects can feasibly be implemented within the next five years based on the projected supply and distribution system. Implementation of recycled water use at Gilroy Sports Park and Glen Loma Ranch Development is contingent upon construction of the park facility, development, and planned pipelines. Until these facilities reach buildout capacity, it may be possible to utilize additional recycled water at existing local farmlands with turnouts along the existing main pipeline to maximize total annual usage.

Distribution system improvements for the short-term CIP will include pipelines, storage, and pumping improvements. The main pipeline alignment will either parallel the existing main pipeline or be routed through the Glen Loma Ranch Development. The difference in these alternatives is 2000 feet. The longer alternative of paralleling the existing pipeline is used for cost estimating purposes.

The short-term CIP includes construction of approximately 16,000 feet of 16-inch diameter pipeline, approximately 24,000 feet of 30-inch diameter pipeline, a second 3 million gallons of onsite treated recycled water storage capacity (for a total of 6 million gallons), and an additional 6 mgd of distribution pumping capacity (for a total of 9 mgd of new capacity).

4.3.4 Long-Term Capital Improvement Program

Groups A3 and B (Hecker Pass customers and Gavilan College) are included in the long-term capital improvement program. These projects will be implemented beyond the next five years, pending necessary retrofits and distribution system expansion. The long-term CIP could be updated in the future to include other additional customers in the Gilroy and Morgan Hill area as they develop. Potential projects that could be added to the long-term CIP in the future could include a southern pipeline to the Pajaro River, additional usage at proposed residential developments, and recycled water usage in Morgan Hill. At this time, these other projects are not feasible based on the Stage II screening in section 3.3.

Distribution system improvements for the long-term CIP will include extension of the Gilroy Sports Park pipeline to serve the Gavilan College area and additional distribution piping in the Hecker Pass area. The pipeline alignment will cross Uvas Creek at the proposed hiking/biking trail bridge, continue along the trail right-of-way until Mesa Road, and turn south along Santa Teresa Boulevard. Based on modeling results, the pipelines will be 16-inch diameter and have a total length of 14,000 feet.

The long-term CIP also includes expansion of booster pump station with an additional 2 mgd capacity.

Table 4.4 summarizes the phased CIP increases in recycled water demand and distribution system improvements.

Figure 4.5 summarizes the project phasing into a detailed implementation schedule, which includes planning, design, construction, environmental compliance, and public involvement steps for each project. As seen in the figure, the next steps of the project will include predesign and design for distribution components of the Master Plan.

The implementation of this Master Plan may deviate from the proposed phasing due to changes in project conditions, customer needs, and the identification of other feasible projects.

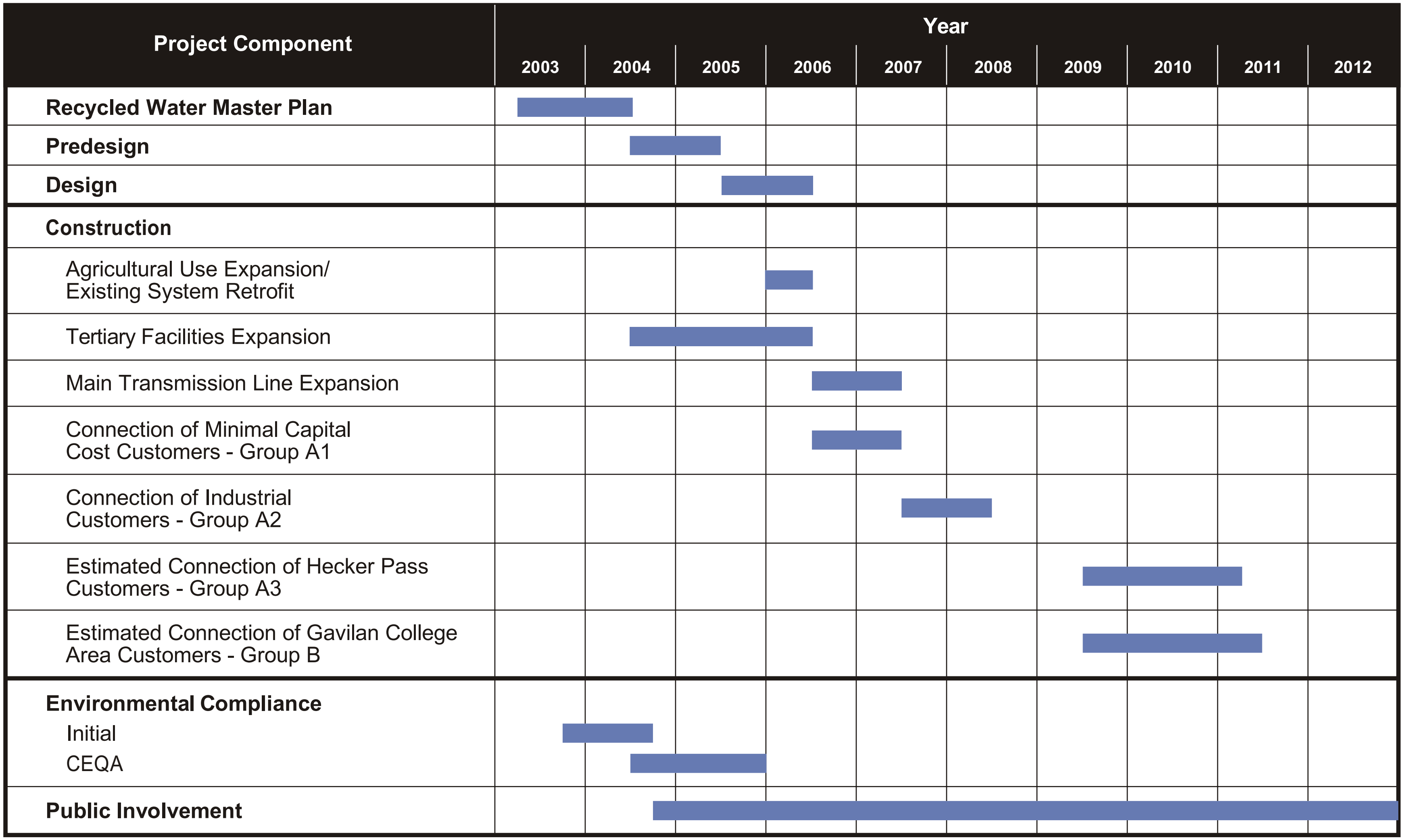


Figure 4.5
IMPLEMENTATION SCHEDULE
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

Table 4.4 Capital Improvement Program - Recycled Water Demand and Distribution System Improvements
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Capital Improvement Program Phase	Maximum Month Demand (mgd)	Maximum Day Demand (mgd)	Distribution System Improvements
Existing	1.8	2.3	-
Immediate-Term (One year)	3.7	4.8	3,000 feet of 12-inch diameter pipeline, retrofit existing Hecker Pass pipeline, 3-MG storage reservoir, 3-mgd on-site WWTP pump station
Short-Term (Next five years)	5.6	7.4	16,000 feet of 16-inch diameter pipeline, 24,000 feet of 30-inch diameter pipeline, 3-MG storage reservoir, 6-mgd on-site WWTP pump station
Long-Term (Beyond five years)	7.1	9.3	14,000 feet of 16-inch diameter pipeline, 2-mgd booster pump station expansion

4.4 COST ESTIMATES AND OTHER IMPLEMENTATION FACTORS

4.4.1 Capital and Project Costs

Project costs include estimated costs of construction, engineering design, construction management and inspection, and contingencies for estimating and construction, where applicable. Construction costs are based on the Engineering News-Record Construction Cost Index (ENRCCI) for San Francisco, a value of 8107 for May 2004. An estimating contingency of 20 percent of estimated capital costs and construction contingency of an additional 20 percent are assumed. Administration, legal, planning, design, and construction management costs are estimated to be 30 percent of the total construction cost at the basis of the study. Costs to achieve CEQA compliance have not been considered here.

Cost summary tables are presented below. A detailed cost breakdown is included in Appendix D. Planning-level estimates of project and capital costs of the immediate-term, short-term, and long-term CIPs are provided in Table 4.5. The costs for each CIP phase are incremental, meaning for example that the cost for the short-term implementation plan is separate from and does not include the costs associated with the immediate-term implementation plan.

Table 4.5 Estimated Project Costs for the Capital Improvement Program
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**		
Description	**Immediate-Term**	**Short-Term[1]**	**Long-Term[1]**
Customer Connections	$4,000	$22,000	$22,000
Customer Retrofits	$0	$105,000	$225,000
Distribution System[4]	$754,000	$6,858,000	$2,885,700
Subtotal[3]	$758,000	$6,988,000	$3,133,000
Estimating Contingency (20%)	$152,000	$1,398,000	$627,000
Construction Contingency (20%)	$182,000	$1,677,000	$752,000
Pumping and Storage[3]	$2,510,000	$3,310,000	--
Total Construction Cost at Basis of Study	$3,600,000	$13,400,000	$4,500,000
Admin, Legal, Planning, Design, and Construction Management (30%)	$1,100,000	$4,400,000	$1,350,000
Total Project Cost[2]	**$4,700,000**	**$17,400,000**	**$5,900,000**
Project Cost for the Entire Proposed CIP	**$28,000,000**		

Notes:
(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.
(2) Project costs do not include cost of California Environmental Quality Act compliance.
(3) Subtotal of capital costs does not include pumping and storage costs, as these cost estimates already include contingencies and are based on MWH’s 50% design cost estimates for the SCRWA tertiary treatment expansion.
(4) Pipeline costs based on unit costs from Harris and Associates’ estimates for water pipeline construction in the City of Gilroy.

Capital costs of the facilities are divided into the following elements:

- Customer Connections
- Customer Retrofits
- Distribution System
- Pumping and Storage

Each element is discussed below. Cost estimates were based on previous project experience.

4.4.1.1 Customer Connections

Connections are required for serving recycled water from the distribution pipelines to customer properties. A total of 13 connections are assumed for the complete project. Items included in the connection cost are: tapping the distribution mains and installing service laterals, meters, pressure reducing valves (PRVs), and a backflow prevention device on the potable water system. It is assumed that the average size for laterals, meters, and PRVs will be one and one half inch. Customer connection costs are estimated to be $1,600 each plus $2,000 each for the installation of a backflow prevention device.

4.4.1.2 Customer Retrofits

Retrofit costs are associated with separating the customer's existing water system from a new recycled water system. An example would be a park where restroom and drinking fountain water supply pipes would need to be isolated from an existing irrigation system. Additional costs include posting signs that identify recycled water is being used. Customer retrofits are one time costs and are a function of existing irrigation systems at each individual site. If the site has existing separate systems, then the retrofit cost is assumed to be zero.

Retrofits are not necessary at the local farmlands, Ascencion Solorsano Middle School, Glen Loma Ranch Development, Gilroy Sports Park, and Hecker Pass Development. Retrofits are necessary at Gilroy High, Gilroy Golf Course, Cintas Laundry, Inland Packaging, Bonfante Gardens, Goldsmith Seeds, Gavilan Golf Course, Gavilan Sports Park, and Gavilan College. Retrofits for most customers were estimated at $25,000 based on customer knowledge and system connection requirements. Retrofits for Gilroy Golf Course were estimated at $5,000 based on previous recycled water usage and customer contact. Retrofits for Gavilan College irrigation were estimated at $75,000 based on customer contact and extensive irrigation system separation necessary.

4.4.1.3 Distribution System

Construction costs for the distribution system include pipe material, excavation, installation, bedding material, backfill material, transport, and paving where applicable. Valves and appurtenances are included in the cost estimate. The costs of acquiring easements for pipeline construction are not included in this estimate, although most distribution pipeline routings are within existing City street right-of-way or existing District right-of-way. Cost estimates for pipeline construction were based on unit costs from Harris and Associates for the water pipelines within the City of Gilroy. Pipeline capital costs for 6-inch and smaller pipelines was estimated to be $81 per linear foot (LF), 12-inch pipelines to be $108/LF, 16-inch pipelines to be $130/LF, and 30-inch pipelines to be $191/LF. Retrofitting of the existing Hecker Pass pipeline has an estimated capital cost of $430,000 based on previous pipeline segment retrofit costs.

4.4.1.4 Pumping and Storage Costs

Estimated capital costs for recycled water pump stations and onsite reservoir storage is based on 50 percent Design Construction Cost Estimates from the SCRWA Filter Plant Expansion. Each 3 mgd pump station is estimated to cost $800,000, including a 20 percent contingency. Each 3 million gallon storage reservoir and associated pump station is estimated to cost $1,710,000, including a 20 percent contingency. For the purposes of this cost estimate, these costs are not subject to the additional 20 percent estimating contingency. The immediate-term CIP includes installation of a 3 mgd pump station and a 3-MG storage reservoir. The long-term CIP includes installation of a second 3 mgd pump station and a second 3-MG storage reservoir, doubling pumping capacity to 6 mgd and storage capacity to 6 MG. On site expansion of SCRWA tertiary treatment facilities, distribution pumping, and storage are considered in the cost estimates for the Master Plan, however design is considered under a separate effort.

4.4.2 Operation and Maintenance Costs

Operation and Maintenance (O&M) costs are comprised of the following items:

- Purchased Power for Pumping
- Distribution System Maintenance
- General Administration

No additional labor costs are included as treatment plant facilities and operation are considered under a separate cover.

4.4.2.1 Purchased Power

Average recycled water flowrate was used to determine power consumption. Costs for electricity are based on a unit price of $0.14 per kilowatt-hour provided by the District.

4.4.2.2 Distribution System Maintenance

The average annual maintenance expense for the recycled water distribution system was based on an assumed value of $2,800 per mile, based on average industry data.

4.4.2.3 General Administration

General administration includes costs associated with customer accounting, meter reading, and other miscellaneous costs associated with operating a water system. General administration costs are estimated at $1,500 per mile of distribution pipeline per year.

Estimates of the O&M costs of the immediate-term, short-term, and long-term CIPs are provided in Table 4.6. A detailed cost breakdown is included in Appendix D.

Table 4.6 Estimated Operation and Maintenance Costs[1]
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	Capital Improvement Program Phase			
Description	**Existing System**	**Immediate-Term**	**Short-Term[2]**	**Long-Term[2]**
Purchased Power	$6,000	$13,000	$41,000	$52,000
Distribution System Maintenance	$21,000	$23,000	$45,000	$54,000
General Administration	$11,000	$12,000	$24,000	$29,000
Subtotal	$38,000	$48,000	$110,000	$135,000
Estimating Contingency (20%)	$8,000	$10,000	$22,000	$27,000
Total O&M Cost[2]	$46,000	$58,000	$132,000	$162,000
Incremental O&M Cost	**-**	**$12,000**	**$74,000**	**$30,000**

Notes:
(1) Operations and maintenance (O&M) costs include costs for distribution only, not treatment. O&M cost estimates include costs for upkeep of the existing distribution system and distribution costs for existing customers.
(2) O&M cost estimates are inclusive of previous phase costs, i.e. long-term plan costs include the existing system, short-term, and immediate-term costs.

4.4.3 Cost Summary

An annual cost of delivered recycled water was estimated based on the above project costs and O&M costs. A 5.5 percent interest rate over 50 years was used to convert the project costs to an annual basis. The annual costs are summarized in Table 4.7.

Each phase of the CIP includes incremental project costs and incremental O&M costs that allow the calculation of the cost per additional acre-foot of recycled water use in each phase. The cost of the entire CIP is the sum of the incremental costs for each phase. The implementation of all projects identified in the entire CIP will result in a maximum month recycled water demand of 7.1 mgd at an estimated project cost of $28,000,000 and annual O&M costs of $162,000. At an estimated ultimate annual recycled water usage of 3,149 afy, the cost of recycled water distribution for the entire CIP is $580 per acre-foot delivered.

4.4.4 Funding Opportunities

While this master plan does not specifically address rates and funding alternatives, this section covers several funding opportunities for the District and SCRWA to be aware of. Water and wastewater utilities rely on several sources of funding to finance their capital improvement programs. These include, but are not limited to the following:

Table 4.7 Annual Capital Improvement Program Cost Summary
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	Capital Improvement Program Phase			
Description	**Existing System**	**Immediate-Term**	**Short-Term(1)**	**Long-Term(1)**
Project Costs (Present Worth)	-	$4,700,000	$17,400,000	$5,900,000
Convert to Annual Basis	5.5% interest over 50 years = 0.0591			
Annual Project Costs	-	$278,000	$1,028,000	$349,000
Incremental O&M Costs	$46,000	$12,000	$74,000	$30,000
Incremental Annual Cost	$46,000	$290,000	$1,102,000	$379,000
Total Annual Flow (AFY)	711	1,566	2,501	3,149
Incremental Flow (AFY)	-	855	935	648
Cost per additional Acre-foot, Annually	**-**	**$340**	**$1,180**	**$580**
Cost per Annual Acre-foot, Entire Proposed CIP	**$580**			

Notes:
(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.
(2) For the purposes of this cost estimate, inflation and discount rate for annualized costs are assumed equal, offsetting cost impacts over the phased construction schedule.

- Rate Revenues
- Connection Fees
- Capital Reserve Balances
- Bonds & Loans
  - Revenue Bonds and Certificates of Participation
  - General Obligation Bonds
  - SRF and other low interest loans
  - Other Bonding Instruments
- Grants
- Developer Constructed Facilities
- Public-Private Partnerships

Below, three funding strategies are identified which might provide the District and SCRWA with alternatives for meeting upcoming capital and O&M expenditures.

- Pay-As-You-Go Versus Debt Financing - As part of each agencies respective capital funding strategies, implementing rate increases in anticipation of the upcoming treatment plant expansion and recycled water distribution system might offer some long-term financial relief. The accumulation of cash reserves will allow each agency to reduce any future debt financing needs, while earning short-term interest. Further, gradual rate increases will attenuate large rate spikes in the future.

  Debt serves several primary functions. Debt financing allows agencies to amortize costs over time, as well as to undertake a larger share of its capital improvements program in the near term and/or mitigate immediate impacts on rates. However, revenue bonds and certificates of participation (COPs) come with certain legal obligations, otherwise avoided by the use of cash financing. Primarily, revenue bonds and COPs require an agency to collect enough revenue, on an annual basis, to meet all ongoing O&M obligations, excluding capital related costs, as well as debt service obligations, plus an additional debt coverage factor. While the coverage factor is delineated in the bond covenants, the three bond rating agencies require that agencies meet a 1.25 coverage ratio. (Revenues must exceed ongoing O&M expenditures plus annual debt service obligation times 1.25.) Coverage requirements might require an agency to increase rates where cash flow needs are otherwise met with existing rate levels.
- Rate Incentives - In order to encourage the use of recycled water, the District needs to provide recycled water rate incentives. Conservation rates, including tiered and seasonal rates, have long been used to create price signals to curb peak water usage. In keeping with a cost of service based rate making approach, the District could implement price signaling techniques to offset the cost of funding its recycled water program. Requiring customers to pay a premium for peak usage could, in turn, provide the District the financial flexibility to offer price incentives for the use of recycled water through reduced rates. Cost of service based rates provide a higher level of defensibility than setting recycled rates at some arbitrary percentage of potable water rates. Further, such a rate incentive program can be implemented in concert with other conservation practices, such as onsite retention facilities and non-peak hour usage.
- Connection Fees - the District might consider recovering some, or all, of the capital costs associated with constructing its recycled water transmission and distribution system from new development through its water connection fees. AB 1600 provides California municipalities with the authority to impose a connection fee on new development in order to require growth to pay for those facilities constructed to provide them with water or sewer availability. Stated differently, connection fees require growth to pay for growth.

APPENDIX A - RECYCLED WATER REGULATIONS

Title 22 Code of Regulations

DIVISION 4. ENVIRONMENTAL HEALTH
CHAPTER 1. INTRODUCTION

ARTICLE 1. DEFINITIONS

60001. Department

Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

60003. Director

Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

CHAPTER 2. REGULATIONS FOR THE IMPLEMENTATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

ARTICLE 1. GENERAL REQUIREMENTS AND CATEGORICAL EXEMPTIONS

60100. General requirements

The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

60101. Specific activities within categorical exempt classes

The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

(a) Class 1: Existing Facilities.

(1) Any interior or exterior alteration of water treatment units, water supply systems, and pump station buildings where the alteration involves the addition, deletion, or modification of mechanical, electrical, or hydraulic controls.

(2) Maintenance, repair, replacement, or reconstruction to any water treatment process units, including structures, filters, pumps, and chlorinators.

(b) Class 2: Replacement or Reconstruction.

(1) Repair or replacement of any water service connections, meters, and valves for backflow prevention, air release, pressure regulating, shut-off and blow-off or flushing.

(2) Replacement or reconstruction of any existing water supply distribution lines, storage tanks and reservoirs of substantially the same size.

(3) Replacement or reconstruction of any water wells, pump stations and related appurtenances.

(c) Class 3: New Construction of Small Structures.

(1) Construction of any water supply and distribution lines of less than sixteen inches in diameter, and related appurtenances.

(2) Construction of any water storage tanks and reservoirs of less than 100,000 gallon capacity.

(d) Class 4: Minor Alterations to Land.

(1) Minor alterations to land, water, or vegetation on any officially existing designated wildlife management areas or fish production facilities for the purpose of reducing the environmental potential for nuisances or vector production.

(2) Any minor alterations to highway crossings for water supply and distribution lines.

CHAPTER 3 WATER RECYCLING CRITERIA
ARTICLE 1 DEFINITIONS

60301. Definitions

60301.100. Approved laboratory

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

60301.160. Coagulated wastewater

"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

60301.170. Conventional treatment

"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

60301.200. Direct beneficial use

"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

60301.220. Disinfected secondary-2.2 recycled water

"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

60301.225. Disinfected secondary-23 recycled water

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

60301.230. Disinfected tertiary recycled water

"Disinfected tertiary recycled water" means a filtered and subsequently disinfected wastewater that meets the following criteria:

(a) The filtered wastewater has been disinfected by either:

> (1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or
>
> (2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

(b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

60301.240. Drift

"Drift" means the water that escapes to the atmosphere as water droplets from a cooling system.

60301.245. Drift eliminator

"Drift eliminator" means a feature of a cooling system that reduces to a minimum the generation of drift from the system.

60301.250. Dual plumbed system

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

(a) To serve plumbing outlets (excluding fire suppression systems) within a building or

(b) Outdoor landscape irrigation at individual residences.

60301.300. F-Specific bacteriophage MS-2

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC 15597B1) and is grown on lawns of E. coli (ATCC 15597).

60301.310. Facility

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

60301.320. Filtered wastewater

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

(a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:

(1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and

(2) So that the turbidity of the filtered wastewater does not exceed any of the following:

(A) An average of 2 NTU within a 24-hour period;

(B) 5 NTU more than 5 percent of the time within a 24-hour period; and

(C) 10 NTU at any time.

(b) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

(1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and

(2) 0.5 NTU at any time.

60301.330. Food crops

"Food crops" means any crops intended for human consumption.

60301.400. Hose bibb

"Hose bibb" means a faucet or similar device to which a common garden hose can be readily attached.

60301.550. Landscape impoundment

"Landscape impoundment" means an impoundment in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves a similar function and is not intended to include public contact.

60301.600. Modal contact time

"Modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.

60301.620. Nonrestricted recreational impoundment

"Nonrestricted recreational impoundment" means an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.

60301.630. NTU

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

60301.660. Peak dry weather design flow

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

60301.700. Recycled wateragency.

"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

60301.710. Recycling plant

"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

60301.740. Regulatory Agency

"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

60301.750. Restricted access golf course

"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

60301.760. Restricted recreational impoundment

"Restricted recreational impoundment" means an impoundment of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreational activities.

60301.800. Spray irrigation

"Spray irrigation" means the application of recycled water to crops to maintain vegetation or support growth of vegetation by applying it from sprinklers.

Section 60301.830. Standby Unit Process.

"Standby unit process" means an alternate unit process or an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment of the actual flow through the unit for which it is a substitute.

60301.900. Undisinfected secondary recycled water.

"Undisinfected secondary recycled water" means oxidized wastewater.

60301.920. Use area

"Use area" means an area of recycled water use with defined boundaries. A use area may contain one or more facilities.

ARTICLE 2. SOURCES OF RECYCLED WATER.

60302. Source specifications.

The requirements in this chapter shall only apply to recycled water from sources that contain domestic waste, in whole or in part.

ARTICLE 3. USES OF RECYCLED WATER.

60303. Exceptions

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

60304. Use of recycled water for irrigation

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,

(2) Parks and playgrounds,

(3) School yards,

(4) Residential landscaping,

(5) Unrestricted access golf courses, and

(6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

(1) Cemeteries,

(2) Freeway landscaping,

(3) Restricted access golf courses,

(4) Ornamental nursery stock and sod farms where access by the general public is not restricted,

(5) Pasture for animals producing milk for human consumption, and

(6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard

(d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:

(1) Orchards where the recycled water does not come into contact with the edible portion of the crop,

(2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,

(3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),

(4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,

(5) Seed crops not eaten by humans,

(6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and

(7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

(e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).

60305. Use of recycled water for impoundments.

(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.

(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:

> (1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.
>
> (2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

60306. Use of recycled water for cooling

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.

(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:

(1) A drift eliminator shall be used whenever the cooling system is in operation.

(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of *Legionella* and other micro-organisms.

60307. Use of recycled water for other purposes

(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Flushing toilets and urinals,

(2) Priming drain traps,

(3) Industrial process water that may come into contact with workers,

(4) Structural fire fighting,

(5) Decorative fountains,

(6) Commercial laundries,

(7) Consolidation of backfill around potable water pipelines,

(8) Artificial snow making for commercial outdoor use, and

(9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:

(1) Industrial boiler feed,

(2) Nonstructural fire fighting,

(3) Backfill consolidation around nonpotable piping,

(4) Soil compaction,

(5) Mixing concrete,

(6) Dust control on roads and streets,

(7) Cleaning roads, sidewalks and outdoor work areas and

(8) Industrial process water that will not come into contact with workers.

(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

ARTICLE 4. USE AREA REQUIREMENTS.

60310. Use area requirements

(a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

(1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.

(2) The well contains an annular seal that extends from the surface into the aquitard.

(3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

(4) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.

(5) The owner of the well approves of the elimination of the buffer zone requirement.

(b) No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.

(c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.

(d) No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well.

(e) Any use of recycled water shall comply with the following:

(1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.

(2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

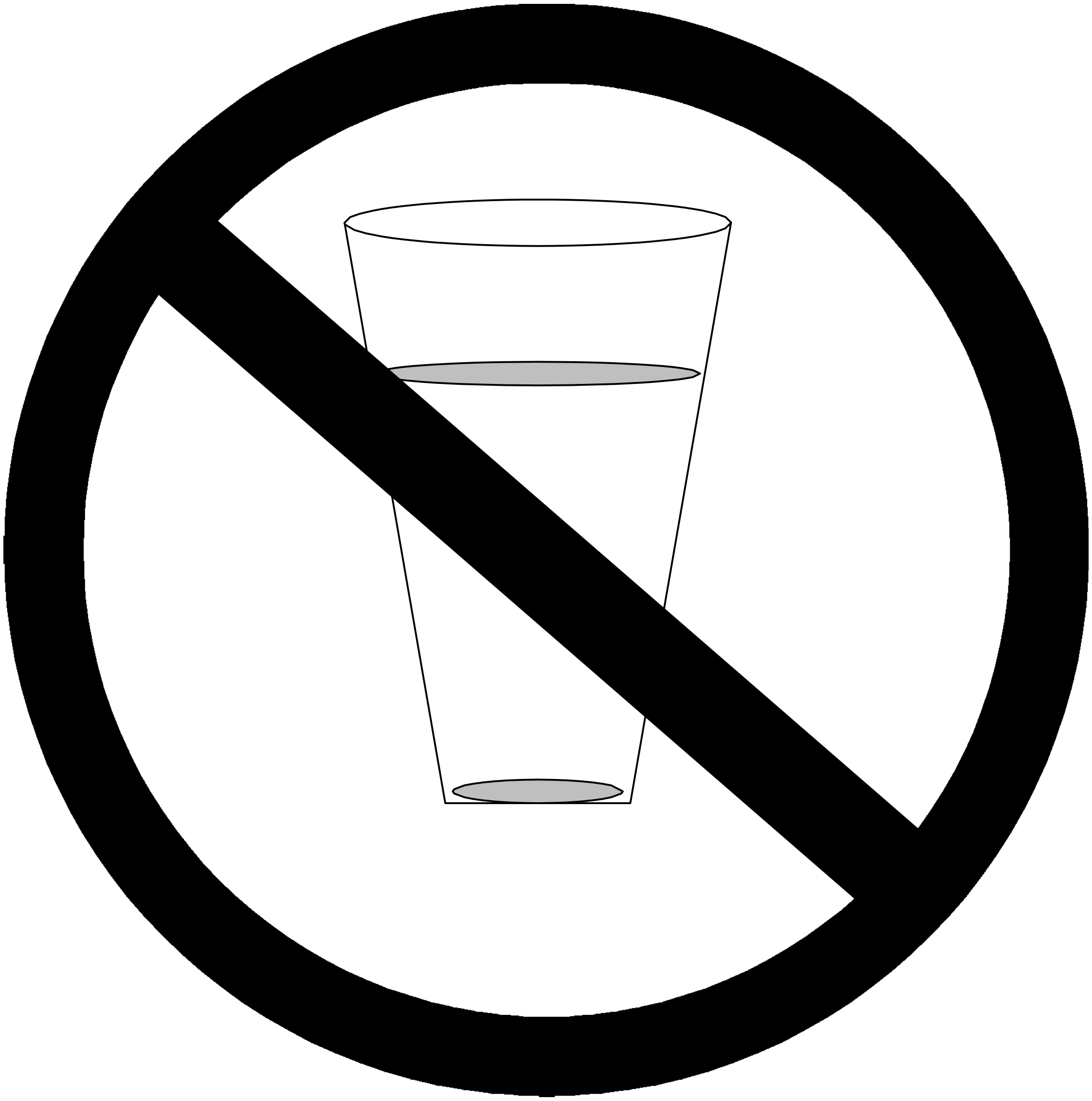
(3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

(f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

(g) All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A. The Department may accept alternative signage and wording, or an educational program, provided the applicant demonstrates to the Department that the alternative approach will assure an equivalent degree of public notification.

(h) Except as allowed under section 7604 of title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.



Water Recycling Criteria

FIGURE 60310-A

ARTICLE 5. DUAL PLUMBED RECYCLED WATER SYSTEMS.

60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual-plumbed facility.

(b) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums.

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

60314. Report submittal

(a) For dual-plumbed recycled water systems, **t**he report submitted pursuant to section 13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and

(E) The specific use to be made of the recycled water at each facility.

(2) Plans and specifications describing the following:

(A) Proposed piping system to be used,

(B) Pipe locations of both the recycled and potable systems,

(C) Type and location of the outlets and plumbing fixtures that will be accessible to the public, and

(D) The methods and devices to be used to prevent backflow of recycled water into the public water system.

(3) The methods to be used by the recycled water agency to assure that the installation and operation of the dual plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system every four years.

(b) A master plan report that covers more than one facility or use site may be submitted provided the report includes the information required by this section. Plans and specifications for individual facilities covered by the report may be submitted at any time prior to the delivery of recycled water to the facility.

60315. Design requirements

The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602 (a) and 7603 (a) of title 17, California Code of Regulations, and the approval of the public water system has been obtained.

60316. Operation requirements

(a) Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Recycled Water Agency shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with section 7605 of Title 17, California Code of Regulations.

ARTICLE 5.1. GROUNDWATER RECHARGE

60320. Groundwater recharge

(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

ARTICLE 5.5. OTHER METHODS OF TREATMENT

60320.5. Other methods of treatment

Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

ARTICLE 6. SAMPLING AND ANALYSIS

60321. Sampling and analysis

(a) Disinfected secondary-23, disinfected secondary-2.2, and disinfected tertiary recycled water shall be sampled at least once daily for total coliform bacteria. The samples shall be taken from the disinfected effluent and shall be analyzed by an approved laboratory.

(b) Disinfected tertiary recycled water shall be continuously sampled for turbidity using a continuous turbidity meter and recorder following filtration. Compliance with the daily average operating filter effluent turbidity shall be determined by averaging the levels of recorded turbidity taken at four-hour intervals over a 24-hour period. Compliance with turbidity pursuant to section 60301.320 (a)(2)(B) and (b)(1) shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24-hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2-hours may be substituted for a period of up to 24-hours. The results of the daily average turbidity determinations shall be reported quarterly to the regulatory agency.

(c) The producer or supplier of the recycled water shall conduct the sampling required in subsections (a) and (b).

ARTICLE 7. ENGINEERING REPORT AND OPERATIONAL REQUIREMENTS

60323. Engineering report

(a) No person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless he files an engineering report.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

60325. Personnel

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

60327. Maintenance

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

60329. Operating records and reports

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

60331. Bypass

There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

ARTICLE 8. GENERAL REQUIREMENTS OF DESIGN

60333. Flexibility of design

The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

60335. Alarms

(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

(1) Loss of power from the normal power supply.

(2) Failure of a biological treatment process.

(3) Failure of a disinfection process.

(4) Failure of a coagulation process.

(5) Failure of a filtration process.

(6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

60337. Power supply

The power supply shall be provided with one of the following reliability features:

(a) Alarm and standby power source.

(b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.

(c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

ARTICLE 9. RELIABILITY REQUIREMENTS FOR PRIMARY EFFLUENT

60339. Primary treatment

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Long-term storage or disposal provisions as specified in Section 60341.

Note: Use of primary effluent for recycled water is no longer allowed. [repeal of Section 60309, effective December 2000]

ARTICLE 10. RELIABILITY REQUIREMENTS FOR FULL TREATMENT

60341. Emergency storage or disposal

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process and a manual reset to prevent automatic restart until the failure is corrected.

60343. Primary treatment

All primary treatment unit processes shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Standby primary treatment unit process.

(c) Long-term storage or disposal provisions.

60345. Biological treatment

All biological treatment unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

60347. Secondary sedimentation

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions.

60349. Coagulation

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

(1) Standby feeders,

(2) Adequate chemical stowage and conveyance facilities,

(3) Adequate reserve chemical supply, and

(4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

(1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions, or

(5) Alarm and standby coagulation process.

60351. Filtration

All filtration unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

(e) Alarm and standby filtration unit process.

Section 60353. Disinfection

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

(1) Standby chlorine supply,

(2) Manifold systems to connect chlorine cylinders,

(3) Chlorine scales, and

(4) Automatic devices for switching to full chlorine cylinders.

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

(1) Alarm and standby chlorinator;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions; or

(5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

Title 17 Code of Regulations

DIVISION 1. STATE DEPARTMENT OF HEALTH SERVICES
CHAPTER 5. SANITATION (ENVIRONMENTAL)
GROUP 4. DRINKING WATER SUPPLIES
ARTICLE 1. GENERAL

7583. Definitions

In addition to the definitions in Section 4010.1 of the Health and Safety Code, the following terms are defined for the purpose of this Chapter

(a) "Approved Water Supply" is a water supply whose potability is regulated by a State of local health agency.

(b) "Auxiliary Water Supply" is any water supply other than that received from a public water system.

(c) “Air-gap Separation (AG)" is a physical break between the supply line and a receiving vessel.

(d) "AWWA Standard" is an official standard developed and approved by the American Water Works Association (AWWA).

(e) "Cross-Connection" is an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.

(f) "Double Check Valve Assembly (DC)" is an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.

(g) "Health Agency" means the California Department of Health Services, or the local health officer with respect to a small water system.

(h) "Local Health Agency" means the county or city health authority.

(i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.

(j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

(k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.

(l) "Water Supplier" is the person who owns or operates the public water system.

(m) "Water User" is any person obtaining water from a public water supply.

7584. Responsibility and scope of program

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

(a) The adoption of operating rules or ordinances to implement the cross-connection program.

(b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,

(c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both,

(d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,

(e) The establishment of a procedure or system for testing backflow preventers, and

(f) The maintenance of records of locations, tests, and repairs of backflow preventers.

7585. Evaluation of hazard

The water supplier shall evaluate the degree of potential health hazard to the public water supply which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. As a minimum, the evaluation should consider: the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

(a) Premises where substances harmful to health are handled under pressure in a manner which could permit their entry into the public water system. This includes chemical or biological process waters and water from public water supplies which have deteriorated in sanitary quality.

(b) Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the water supplier and is approved by the health agency.

(c) Premises that have internal cross-connections that are not abated to the satisfaction of the water supplier or the health agency.

(d) Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.

(e) Premises having a repeated history of cross-connections being established or re-established.

7586. User supervisor

The health agency and water supplier may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multipiping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently made. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment.

ARTICLE 2. PROTECTION OF WATER SYSTEM

7601. Approval of backflow preventers

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

7602. Construction of backflow preventers

(a) Air-gap Separation. An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

(b) Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

7603. Location of backflow preventers

(a) Air-gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

7604. Type of protection required.

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double check Valve Assembly--(DC), Reduced Pressure Principle Backflow Prevention Device--(RP) and an Air gap Separation--(AG). The water user may choose a higher level of protection than required by the water supplier. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard, are given in Table 1. Situations not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the water supplier or health agency.

TABLE 1
TYPE OF BACKFLOW PROTECTION REQUIRED

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where there are waste water pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where there is an unapproved auxiliary RP water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP

(c) Recycled water	
(1) Premises where the public water system is used to supplement the recycled water supply.	AG
(2) Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system.	RP
(3) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a).	DC
(d) Fire Protection Systems	
(1) Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected).	DC
(2) Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from private reservoirs or tanks are used.	DC
(4) Premises where the fire system is supplied from the public water system and where recycled water is used in a separate piping system within the same building.	DC

(e) Dockside Watering Points and Marine Facilities	
(1) Pier hydrants for supplying water to vessels for any purpose.	RP
(2) Premises where there are marine facilities.	RP
(f) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that do not exist.	RP
(g) Premises where there is a repeated history of cross-connections being established or re-established.	RP

Section 7605. Testing and maintenance of backflow preventers

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

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APPENDIX B - RECYCLED WATER CUSTOMER INFORMATION

Potential Recycled Water Customer Information
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10
Site No.	**Customer**	**Use**	**Water Supplier**	**Existing Water Use** (afy)	**Irrigable Area** (acres)	**Rec. Water Demand** (afy)	**Contact**	**Phone**	**Address**
	Existing Users								
E-1	Christmas Hill Park Ranch Addition	Irrigation	SCRWA	17		17			Uvas Park / Miller
E-2	Christmas Hill Park	Irrigation	SCRWA	0	8	30			Uvas Park / Miller
E-3	Eagle Ridge Development	Golf course, Irrigation	SCRWA	561		561	Brian McCray	846-5628	Santa Teresa
E-4	Obata Farms (near plant)	Agricultural Irrigation	SCRWA	58		58			
E-5	Calpine-Gilroy Energy Center (peak)	Cooling water	SCRWA	45		45			Pacheco Pass
	TOTAL EXISTING REUSE		SCRWA	**681**		**711**			
	Commercial/Industrial Users								
1	Cintas Corporation	Commercial Laundry	Gilroy Water	45	N/A	45	Franz Lubick	848-1023	934 Holloway / Silacci
2	Inland Paperboard and Packaging	Paper Products	Gilroy Water	34	N/A	26	Russ Asp	847-6400	6400 Jamieson / E. Luchessa
69	Calpine Gilroy Power Plant	Cooling Water	Private Well	307	N/A	307			Pacheco Pass
	Large Irrigation Users								
3	Gavilan College	Irrigation	Private Well	+	20	72	Art-Manager	848-4705	Santa Teresa / Mesa
4	Gavilan Sports Park	sports fields	Private Well	+	7.2	26	Art-Manager	848-4705	Castro Valley / Santa Teresa
5	Gavilan Golf Course	Golf Course	Private Well	228	36	130		846-4920	Castro Valley / Santa Teresa
6	Bonfante Gardens	ornamental plants, vineyard	Private Well	678	90	340	Barbara Granter-VP	840-7135	Hecker Pass / Burchell
7	Gilroy Golf Course	Irrigation	Gilroy Water	144	40	144	Albert Canedo	848-0492	Hecker Pass Highway
8	Gilroy Sports Park	Irrigation	N/A	0	60	226	Bill Hedley	846-0283	Monterey / W Luchessa
9	Goldsmith Seeds	Nursery irrigation		N/A	N/A	15	Michael Elliott	847-7333	Hecker Pass
23	Gilroy High School	Irrigation	Gilroy Water	64	16	61	Facilities Planning		Tenth / Princevalle
						1014			
	Parks						Karla/Bill Faus	846-0460	
10	Forest Street Park	Irrigation	Gilroy Water	N/A	1.0	4			Forest / Seventh
11	El Roble Park	Irrigation	Gilroy Water	11	3.2	11			Wren / Perrelli
12	Miller Park	Irrigation	Gilroy Water	15	4.3	15			Second / Princevale
13	San Ysidro Park	Irrigation	Gilroy Water	21	6.8	21			Murray / Lewis / 101
14	Las Animas Park	Irrigation	Gilroy Water	77	24	77			Mantelli / Wren
15	Rainbow Park	Irrigation	Gilroy Water	7	1.0	4			Mantelli / Hirasaki
16	Del Rey Park	Irrigation	Gilroy Water	13	1.7	6			Calle Del Rey / Partridge
	Cemeteries								
17	Gavilan Hills Memorial Park	Irrigation	Private Well	16	10	16	Steve	847-4040	First / Kern
18	Saint Mary Cemetery	Irrigation	Private Well	2	1	2	Steve	847-4040	First / Wren
	Medians/Interchanges								
19	Highway 101/Monterey	Irrigation	N/A	0	3.5	13	Dave Nilson, Caltrans	452-7122	Highway 101/Monterey
20	Highway 101/Tenth/Pacheco Pass	Irrigation	N/A	0	10	38	Dave Nilson, Caltrans	452-7122	Highway 101/Tenth/Pacheco Pass
21	Highway 101/Leavesley	Irrigation	N/A	0	6.4	24	Dave Nilson, Caltrans	452-7122	Highway 101/Leavesley
22	Highway 101 Median	Irrigation	N/A	0	18	68	Dave Nilson, Caltrans	452-7122	Highway 101 Median

Potential Recycled Water Customer Information
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10
Site No.	**Customer**	**Use**	**Water Supplier**	**Existing Water Use** (afy)	**Irrigable Area** (acres)	**Rec. Water Demand** (afy)	**Contact**	**Phone**	**Address**
	Schools						Charlie van Meter	847-2700 x6349	
24	Glen View Elementary	Irrigation	Gilroy Water	4	5	4			Eighth / Princevalle
25	Gateway School	Irrigation	Gilroy Water	*	*	*			Hanna / Ninth
26	El Roble Elementary	Irrigation	Gilroy Water	N/A	5	19			Third / Wren
27	Jordan Elementary	Irrigation	Gilroy Water	18	3.5	13			Third / Hanna
28	Brownell Academy of Humanities	Irrigation	Gilroy Water	17	3.5	13			Second / Carmel
29	Eliot Elementary	Irrigation	Gilroy Water	8	1.25	5			Seventh / Old Gilroy
30	South Valley Junior High - Sciences	Irrigation	Gilroy Water	36	12	36			I.O.O.F. / Murray
31	Gilroy Community Day	Irrigation	Gilroy Water	*	*	*			I.O.O.F. / Forest
32	Gilroy Adult Education	Irrigation	Gilroy Water	*	*	*			I.O.O.F. / Forest
33	St. Mary's	Irrigation	Gilroy Water	11	2	8			First / Church
34	Las Animas Elementary	Irrigation	Gilroy Water	20	4	15			Wren / Welburn
35	Cornerstone Christian	Irrigation		*	*	*			Wren / Welburn
36	Rod Kelley Elementary	Irrigation	Gilroy Water	33	6.5	25			Mantelli / Kern
37	Mt. Madonna High	Irrigation	Gilroy Water	*	*	*			Mantelli / Hirasaki
38	Vineyard Christian	Irrigation		N/A	0	0			First / Santa Teresa
39	Adventist Christian	Irrigation		N/A	3	11			Mantelli / Welburn
40	Pacific West Christian Academy	Irrigation		*	*	*			Mantelli / Welburn
41	Luigi Aprea Fundamental Elementary	Irrigation	Gilroy Water	17	4	15			Calle Del Rey / Lerma
42	Antonio Del Buono Elementary	Irrigation	Gilroy Water	17	3	11			Wren / Farrell
43	San Ysidro Elementary	Irrigation		N/A	2.1	8			Pacheco Pass / Frazier Lake
44	Ascension Solorsano Middle	Irrigation		N/A	3	11			Grenache / Club
	Agriculture								
45	Obata Farms	agricultural irrigation	Private Well	420	225	855	Tom Obata	842-9809	Around SCRWA WWTP
	Residential Developments								
46	Glen Loma Ranch	Irrigation	None	0	30	114	0	0	Santa Teresa / Luchessa
47	Hecker Pass Development	Irrigation	None	0	17	65	0	0	Hecker Pass Highway
						674			
	Morgan Hill Projects								
48-67	Morgan Hill Projects	Irrigation	Various	N/A	0	389	0	0	Morgan Hill
68	AIM/Fry's Golf Course	Irrigation	Private Well	N/A	0	380	0	0	Maple / Foothill
						769			

Potential Recycled Water Customer Information
SCVWD South County Recycled Water Master Plan

1 **Site No.**	2 **Customer**	3 **Use**	4 **Water Supplier**	5 **Existing Water Use** (afy)	6 **Irrigable Area** (acres)	7 **Rec. Water Demand** (afy)	8 **Contact**	9 **Phone**	10 **Address**

Column Footnotes:

1	Site number assigned in order of listing in Market Assessment.
2	Customer Name.
3	Expected type of recycled water use.
4	Current water supplier.
5	Existing water use (acre-feet per year), used where available to estimate expected annual recycled water usage.
6	Estimated irrigable area (acres).
7	Projected water usage (acre-feet per year), based on evapotranspiration and rainfall, used where applicable to estimate peak recycled water flowrates.
8	Contact person for issues related to recycled water use at the site.
9	Phone number of contact person, area code 408.
10	Address or intersection of site in Gilroy.
+	Gavilan College and Gavilan Sports Park usage is included with Gavilan Golf Course.
*	A * indicates the existing use is included with that of the site listed above.
N/A	Existing water usage data was not available.

	Future Planned Sites								
F-1	Sunrise Park (Hogan Way)								Hogan / Saddler
F-2	Los Arroyos Park (Hirasaki)								Hirasaki / Morro
F-3	Carriage Hills Park (Longmeadow)								Longmeadow / Rancho Hills
F-4	Farrell Avenue Park (N of Buono Elem.)								Wren / Farrell

Sites Deleted	**Notes**		
Butcher Park	No turf grass, minimal area		Eighth / Old Gilroy
Renz Park	too small		Hanna / Oak Circle
Gavilan Hills Academy	Doesn't exist		Pacheco Pass / Frazier Lake
Thousand Trails	out of study area		Uvas / Watsonville
James Blocher	out of study area		Hecker Pass / Watsonville
Eagle Ridge area Middle School	Decided not to use Rec. Water		
ConAgra	Requires potable water	Private Well	Pacheco Pass / Silaci
Masoni, Louis	out of study area	Private Well	Ferguson / Crews
Urshan, David	out of study area	Private Well	Ferguson / Crews

Potential Recycled Water Customer Contact Record
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Customer **Contact Info**

Caltrans Dave Nilson, Area Superintendent, (408) 232-0228

- Doesn't currently have manpower for landscape crews to support maintenance
- Long term plan would be OK
  If city would accept responsibility for support, then interested
- Could continue up through Morgan Hill, Caltrans may be able to assist

Inland Paperboard and Packaging Russ Asp, Plant Manager, (408) 847-6400

- Concerned about bacteria and pH, water quality in general
  Not a huge water user, not all could be replaced with RW
- Requests a contact letter including benefits of using RW and discussion of water quality/comparison with potable supply

Gavilan College Art Kerr, Facilities Services, (408) 848-4705

- Is interested in the potential for recycled water, and believes it would be beneficial.
- Believes it is workable to separate Gavilan Sports Park fields, Gavilan football and softball fields, and the golf course from the existing interconnected system. Golf Course (60 acres) would require more domestic separations and retrofits.
- In late 2004/2005, a bond issue is planned to isolate the campus sprinkler irrigation system. A recommendation in the RW MP would be beneficial in achieving this objective, and allowing design for recycled water conversion.
- Is project financially feasible? Current irrigation and potable systems are completely connected throughout campus. Will the District cover some or all of the retrofit costs?
- Only one water meter, no idea on current irrigation quantity. 120 total acres

Gilroy Golf Course Albert Canedo, Superintendent, (408) 848-0492

- 35-40 irrigated acres, 50 total. Some days they irrigate all day long, need 600 gpm to irrigate only at night
- Main concern - ability to use water during the day
  Irrigation system is separate
- Interested in the potential for storage, such as a lake
  Long term plan to expand to 18 holes

Cintas Corporation Franz Lubick, Plant Manager, (408) 848-1023

- Operate 5 days a week, at 50,000 gpd
  Need good water quality, low TSS and turbidity to protect laundered clothes
- Could WWTP ease discharge requirements for BOD and TSS?
  Uses a turbidity wedge to measure turbidity

Gavilan Hills Memorial Park Steve, Property Manager, (408) 847-4040

- Operates both cemeteries. GHMP has 15 total acres, 10 irrigated. SMC has 5 total acres, 1 irrigated.
- Is interested in potential cost savings and reliable supply without concern for conservation
- Will use about 16 acre-feet this year.

Obata Farms Tom Obata, (408) 842-9809

- Could use much more recycled water than currently using, limited due to distribution system
  Currently has two large plots of land. To the south and west of the SCRWA WWTP, he has 350 acres leased from the city. Currently, about 30 acres of this are irrigated with recycled water. We discussed a potential underground pipe extending about 2000 feet to the southwest from the WWTP through City-owned land that would allow him to irrigate the entire 350 acres with recycled water.
- Obata Farms' other large plot of land covers both sides of the Princevalle Drain and existing recycled water distribution pipeline. He currently has two turnouts/valves on the pipeline which he has not been allowed to use.
- We discussed estimated water usage, and he believes the 3.8 ac-ft per year value is very reasonable. Most demanding crops are broccoli and bell peppers. June through September are peak usage months.
- Has never seen any adverse water quality impacts, even on sensitive lettuce/spinach crops, and is very pleased with overall water quality. Would be interested in seeing a mineral/constituent comparison with groundwater.
- Does not currently have a written or structured Recycled Water User Agreement with SCRWA/SCVWD. Would be very interested in a written agreement, and is willing to take water on an "As Available" basis.

Eagle Ridge Golf Course Brian McCray, (408) 846-5628

- Irrigates from 9 PM until 6 AM generally. On hottest summer days, until 10 AM.
- Draws recycled water at a constant rate during the day to fill onsite storage ponds. Generally filled by 2 PM.
- Will continue to use approximately the same amount of recycled water.

City of Gilroy Planning

- Bill Faus, Planning Director, (408) 846-0253
- Rick Smelser, City Engineer, (408) 846-0450
- Bill Hedley, Parks and Rec, (408) 846-0450

Recycled Water Potential Routing Scenarios: Group Definitions
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Group	**Site No.**	**Site Name**	**Area** (acres)	**Percent Irrigable** (%)	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (gpm)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (gpm)	**Peak Hour Demand** (mgd)	**Approx. Elevation** (feet)
Exist.	E-1	Xmas Hill - Ranch Addition				17	17	17	3	0.04	0.15	33	0.05	0.02	100	0.14	
Exist.	E-2	Christmas Hill Park	8	100%	8	-	30	30	6	0.07	0.26	60	0.09	0.03	179	0.26	
Exist.	E-3	Eagle Ridge Development				561	561	561	112	1.22	4.86	1101	1.59	0.24	1321	1.90	
Exist.	E-4	Obata Farms (near plant)				58	58	58	12	0.13	0.50	114	0.16	0.03	152	0.22	
Exist.	E-5	Calpine Peaker Plant**				45	45	45	33	0.36	1.43	323	0.47	0.09	485	0.70	
Exist.		**TOTAL EXISTING**			**8**	**681**	**711**	**711**	**166**	**1.81**	**7.20**	**1631**	**2.35**	**0.412**	**2237**	**3.22**	
A1	23	Gilroy High	40	40%	16	64	61	61	12	0.13	0.53	119	0.17	0.07	358	0.52	205
A1	44	Ascension Solorsano Middle	6	50%	3		11	11	2.3	0.02	0.10	22	0.03	0.01	67	0.10	220
A1	7	Gilroy Golf Course	50	80%	40	144	152	144	30	0.33	1.32	298	0.43	0.16	895	1.29	236
A1	8	Gilroy Sports Park	70	85%	60	-	226	226	45	0.49	1.96	444	0.64	0.24	1331	1.92	192
A1	46	Glen Loma Ranch Dev.			30	-	114	114	23	0.25	0.99	224	0.32	0.12	671	0.97	
A1		**TOTAL GROUP A1**			**149**	**208**	**564**	**556**	**113**	**1.23**	**4.89**	**1107**	**1.59**	**0.61**	**3322**	**4.78**	
A2	1	Cintas Laundry	N/A	-	-	52	45	45	4.5	0.05	0.20	44	0.06	0.02	106	0.15	180
A2	2	Inland Packaging	N/A	-	-	62	26	26	2.6	0.03	0.11	26	0.04	0.01	61	0.09	185
A2	69	Calpine Gilroy Power Plant	N/A	-	-	307	307	307	59.8	0.65	3.04	688	0.99	0.13	688	0.99	180
A2		**TOTAL GROUP A2**	**N/A**		**-**	**421**	**378**	**378**	**67**	**0.73**	**3.35**	**758**	**1.09**	**0.16**	**855**	**1.23**	
A3	9	Goldsmith Seeds			-	30	15	15	3.0	0.03	0.13	29	0.04	0.02	88	0.13	240
A3	6	Bonfante Gardens	250	36%	90	678	340	340	68	0.74	2.95	667	0.96	0.37	2001	2.88	245
A3	47	Hecker Pass Development	19	90%	17	-	65	65	13	0.14	0.56	127	0.18	0.07	382	0.55	240
A3		**TOTAL GROUP A3**			**107**	**708**	**420**	**420**	**84**	**0.91**	**3.64**	**824**	**1.19**	**0.45**	**2472**	**3.56**	
B	3	Gavilan College	50	40%	20	72	76	72	15	0.17	0.66	149	0.21	0.08	447	0.64	240
B	4	Gavilan Sports Park	8	90%	7.2	26	27	26	5.5	0.06	0.24	54	0.08	0.03	161	0.23	210
B	5	Gavilan Golf Course	40	90%	36	130	137	130	27	0.30	1.19	268	0.39	0.15	805	1.16	220
B		**TOTAL GROUP B**			**63**	**228**	**240**	**228**	**48**	**0.52**	**2.08**	**471**	**0.68**	**0.26**	**1414**	**2.04**	
C	24	Glen View Elementary	10	50%	5	4	19	4	3.8	0.04	0.16	37	0.054	0.021	112	0.16	205
C	25	Gateway School	included with Glen View			-			-		-		-	-		-	200
C	26	El Roble Elementary	10	50%	5	-	19	19	3.8	0.04	0.16	37	0.054	0.021	112	0.16	215
C	11	El Roble Park	3.5	90%	3.2	11	12	11	2.4	0.03	0.10	23	0.034	0.013	70	0.10	215
C	27	Jordan Elementary	7	50%	3.5	18	13	13	2.7	0.03	0.12	26	0.038	0.014	78	0.11	205
C	28	Brownell Academy	7	50%	3.5	17	13	13	2.7	0.03	0.12	26	0.038	0.014	78	0.11	210
C	12	Miller Park	4.75	90%	4.3	15	16	15	3.2	0.04	0.14	32	0.046	0.018	96	0.14	210
C	17	Gavilan Hills Memorial Park	15	67%	10	16	38	16	7.6	0.08	0.33	75	0.108	0.041	225	0.32	225
C	18	Saint Mary Cemetery	5	20%	1	2	4	2	0.8	0.01	0.03	7	0.011	0.004	22	0.03	220
C	38	Vineyard Christian															250
C		**TOTAL GROUP C**			**35**	**83**	**135**	**93**	**27**	**0.29**	**1**	**264**	**0.38**	**0.15**	**793**	**1.14**	
D	30	South Valley Junior High	30	40%	12	36	46	36	9.1	0.10	0.40	89	0.129	0.049	268	0.39	195
D	31	Gilroy Community Day	included with South Valley Junior High			-		0	-		-		-	-		-	195
D	32	Gilroy Adult Education	included with South Valley Junior High			-		0	-		-		-	-		-	195
D	33	St. Mary's School			2	11	8	8	1.5	0.02	0.07	15	0.021	0.008	45	0.06	195
D	13	San Ysidro Park	9	90%	8.1	21	31	21	6.2	0.07	0.27	60	0.087	0.033	181	0.26	190
D		**TOTAL GROUP D**			**22**	**68**	**84**	**65**	**17**	**0.18**	**0.73**	**165**	**0.237**	**0.091**	**494**	**0.71**	
E	34	Las Animas Elementary	8	50%	4.0	20	15	15	3.0	0.03	0.13	30	0.043	0.016	89	0.13	215
E	35	Cornerstone Christian	included with Las Animas Elem.			-		0	-		-		-	-		-	215
E	14	Las Animas Park	28	85%	24	77	90	77	18	0.20	0.78	177	0.256	0.098	532	0.77	210
E	36	Rod Kelley Elementary	13	50%	6.5	33	25	25	4.9	0.05	0.21	48	0.070	0.027	145	0.21	220
E	37	Mt. Madonna High	included with Rod Kelley Elem.			-		0	-		-		-	-		-	220
E	15	Rainbow Park	1.2	80%	1.0	7	4	4	0.7	0.01	0.03	7	0.010	0.004	21	0.03	220
E		**TOTAL GROUP E**			**35**	**137**	**134**	**121**	**27**	**0.29**	**1.16**	**263**	**0.379**	**0.145**	**789**	**1.14**	

Recycled Water Potential Routing Scenarios: Group Definitions
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Group	**Site No.**	**Site Name**	**Area** (acres)	**Percent Irrigable** (%)	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (gpm)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (gpm)	**Peak Hour Demand** (mgd)	**Approx. Elevation** (feet)
F	19	Monterey St. Interchange	7	50%	3.5	-	13	13	2.7	0.03	0.12	26	0.038	0.014	78	0.11	185
F	20	Tenth St. Interchange	20	50%	10	-	38	38	7.6	0.08	0.33	75	0.107	0.041	224	0.32	185
F	21	Leavesley Rd. Interchange	16	40%	6.4	-	24	24	4.9	0.05	0.21	48	0.069	0.026	143	0.21	200
F	22	Highway 101 Median	20	90%	18	-	68	68	14	0.15	0.59	134	0.193	0.074	403	0.58	190
F		**TOTAL GROUP F**			**38**	**0**	**144**	**144**	**29**	**0.31**	**1.25**	**283**	**0.407**	**0.156**	**848**	**1.22**	
G	39	Adventist Christian	6	50%	3.0	-	11	11	2.3	0.02	0.10	22	0.032	0.012	67	0.10	230
G	40	Pacific West Christian	Included with Adventist			-		0	-		-		-	-		-	230
G	41	Luigi Aprea Elementary	8	50%	4	17	15	15	3.0	0.03	0.13	30	0.043	0.016	89	0.13	225
G	16	Del Rey Park	2.75	60%	1.7	13	6	6	1.3	0.01	0.05	12	0.018	0.007	37	0.05	225
G		**TOTAL GROUP G**			**9**	**30**	**33**	**33**	**7**	**0.07**	**0.28**	**64**	**0.093**	**0.036**	**193**	**0.28**	
H	10	Forest Street Park	1.1	90%	1.0	-	4	4	0.8	0.01	0.03	7	0.011	0.004	22	0.03	195
H	29	Eliot Elementary	2.5	50%	1.3	8	5	5	1.0	0.01	0.04	9	0.013	0.005	28	0.04	195
H	42	del Buono Elementary	6	50%	3.0	17	11	11	2.3	0.02	0.10	22	0.032	0.012	67	0.10	215
H	43	San Ysidro Elementary	4.2	50%	2.1	-	8	8	1.6	0.02	0.07	16	0.023	0.009	47	0.07	175
H		**TOTAL GROUP H**			**7.3**	**25**	**28**	**28**	**5.6**	**0.06**	**0.24**	**55**	**0.079**	**0.030**	**164**	**0.24**	
I	48-67	Morgan Hill Projects			57	358	400	389	78	0.85	3.37	763	1	0	2289	3	350
I	68	AIM/Fry's Golf Course			100	-	380	380	76	0.83	3.29	746	1.074	0.412	2237	3.22	350
I		**TOTAL GROUP I**				**358**	**780**	**769**	**154**	**1.67**	**6.66**	**1509**	**2.17**	**0.83**	**4526**	**6.52**	
Agr.	**45**	**Obata Farms**			**225**	**420**	**855**	**855**	**171**	**1.86**	**7.41**	**1678**	**2.42**	**0.412**	**2237**	**3.22**	165

Column Footnotes:

1 Grouping assigned in priority order, according to water usage and potential capital costs.
2 Site number from market assessment.
3 Site name and group totals.
4 Total site area from market assessment (acres).
5 Percent of site area that is irrigated.
6 Estimated Irrigable Area (acres).
7 Current water usage (acre-feet per year), from either private wells or Gilroy Municipal Water. Current information was not available for all sites.
8 Projected water usage (acre-feet per year), based on evapotranspiration and rainfall.
9 Estimated Annual Recycled Water Usage (acre-feet per year), conservatively based on the lower of current and projected water usage.
10 Maximum Month recycled water demand (acre-feet), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
11 Maximum Month recycled water demand (million gallons per day), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
12 Peak Day Recycled Water Demand (acre-feet), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3.
13 Peak Day Recycled Water Demand (gallons per minute), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3, adjusted for units change.
14 Peak Day Recycled Water Demand (million gallons per day), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3, adjusted for units change.
15 Peak Hour Recycled Water Demand (acre-feet), calculated as peak day demand divided by 8 hours of use per day.
16 Peak Hour Recycled Water Demand (gallons per minute), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.
17 Peak Hour Recycled Water Demand (million gallons per day), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.
18 Approximate elevation of site (feet), taken from USGS map.
** Calpine maximum month, peak day, and peak hour factors based on water usage calculations by Calpine provided by SCVWD.

Appendix B

Recycled Water Potential Routing Scenarios: Morgan Hill Users
SCVWD South County Recycled Water MasterPlan

1	2	3	6	7	8	9	10	11	12	13	14	15	16	17
Group	**Site No.**	**Site Name**	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (gpm)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (gpm)	**Peak Hour Demand** (mgd)
I	48	Paradise Park	8	22	23	22	4.5	0.05	0.19	44	0.063	0.024	132	0.19
I	49	Diana Park	4	0	12	12	2.3	0.03	0.10	23	0.033	0.013	69	0.10
I	50	Galvin Community Park	7.3	11	21	11	2.2	0.02	0.10	22	0.032	0.012	66	0.09
I	51	Howard Weichart Park	1	0	3	3	0.6	0.01	0.03	6	0.008	0.003	17	0.02
I	52	Community Park	23	67	67	67	13.4	0.15	0.58	131	0.189	0.073	394	0.57
I	53	Civic Center	8	0	23	23	4.7	0.05	0.20	46	0.066	0.025	137	0.20
I	54	Police Dept. Landscaping	0.1	0	0.29	0.3	0.1	0.001	0.00	1	0.001	0.000	2	0.00
I	55	M.H. Museum	0.2	11	1	1	0.1	0.001	0.01	1	0.002	0.001	3	0.00
I	56	Condit/Dunne Median	0.1	0	0.29	0.3	0.1	0.001	0.00	1	0.001	0.000	2	0.00
I	57	Jackson Meadows Median	0.1	0	0.29	0.3	0.1	0.001	0.00	1	0.001	0.000	2	0.00
I	58	Second St. Median	0.5	0	1	1.5	0.3	0.003	0.01	3	0.004	0.002	9	0.01
I	59	Cochrane Median	2	0	6	5.8	1.2	0.01	0.05	11	0.016	0.006	34	0.05
I	60	Monterey St. Downtown Median	2.3	11	7	7	1.3	0.01	0.06	13	0.019	0.007	39	0.06
I	61-67	Morgan Hill School District	N/A	235	235	235	47.0	0.51	2.04	461	0.664	0.255	1384	1.99
		TOTAL	**56.6**	**358**	**400**	**389**	**78**	**0.85**	**3.37**	**763**	**1.10**	**0.42**	**2289**	**3.30**

Column Footnotes:

1 Grouping assigned in priority order, according to water usage and potential capital costs.
2 Site number from market assessment.
3 Site name and group totals.
4 Total site area from market assessment (acres).
5 Percent of site area that is irrigated.
6 Estimated Irrigable Area (acres).
7 Current water usage (acre-feet per year), from either private wells or Gilroy Municipal Water. Current information was not available for all sites.
8 Projected water usage (acre-feet per year), based on evapotranspiration andrainfall.
9 Estimated Annual Recycled Water Usage (acre-feet per year), conservatively based on the lower of current and projected water usage.
10 Maximum Month recycled water demand (acre-feet), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
11 Maximum Month recycled water demand (million gallons per day), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
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14 Peak Day Recycled Water Demand (million gallons per day), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3, adjusted for units change.
15 Peak Hour Recycled Water Demand (acre-feet), calculated as peak day demand divided by 8 hours of use per day.
16 Peak Hour Recycled Water Demand (gallons per minute), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.
17 Peak Hour Recycled Water Demand (million gallons per day), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.

Recycled Water Potential Routing Scenarios: Group Totals
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10	11
Group	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (mgd)
Exist.	8	681	711	711	166	1.81	7.20	2.35	0.41	3.22
A1	149	208	564	556	113	1.23	4.89	1.59	0.61	4.78
A2		421	378	378	66.9	0.73	3.35	1.09	0.16	1.23
A3	107	708	420	420	84	0.91	3.64	1.19	0.45	3.56
B	63	228	240	228	48	0.52	2.08	0.68	0.26	2.04
C	35	83	135	93	27	0.29	1.17	0.38	0.15	1.14
D	22	68	84	65	17	0.18	0.73	0.24	0.09	0.71
E	35	137	134	121	27	0.29	1.16	0.38	0.15	1.14
F	38	0	144	144	29	0.31	1.25	0.41	0.16	1.22
G	9	30	33	33	6.6	0.07	0.28	0.09	0.04	0.28
H	7	25	28	28	5.6	0.06	0.24	0.08	0.03	0.24
I	157	358	780	769	154	1.67	6.66	2.17	0.83	6.52
Agr.	225	420	855	855	171	1.86	7.41	2.42	0.41	3.22
TOTAL	**855**	**3367**	**4506**	**4401**	**914**	**9.9**	**40.1**	**13.1**	**3.7**	**29.3**
Exist	8	681	711	711	166	1.8	7.2	2.3	0.4	3.2
Imm.	233	1101	1566	1566	337	3.7	14.6	4.8	0.8	6.4
Short	382	1730	2509	2501	517	5.6	22.9	7.4	1.6	12.5
Long	552	2666	3169	3149	649	7.1	28.6	9.3	2.3	18.1
A123	256	1337	1362	1354	264	2.87	11.88	3.87	1.22	9.6
BCDE	156	516	593	506	119	1.29	5.14	1.68	0.64	5.0
FGHI	210	413	985	974	195	2.12	8.44	2.75	1.05	8.3

Column Footnotes:

1	Group totals for each grouping alternative.
2	Estimated Irrigable Area (acres).
3	Current water usage (acre-feet per year), from either private wells or Gilroy Municipal Water. Current information was not available for all sites.
4	Projected water usage (acre-feet per year), based on evapotranspiration and rainfall.
5	Estimated Annual Recycled Water Usage (acre-feet per year), conservatively based on the lower of current and projected water usage.
6	Maximum Month recycled water demand (acre-feet), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
7	Maximum Month recycled water demand (million gallons per day), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
8	Peak Day Recycled Water Demand (acre-feet), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3.
9	Peak Day Recycled Water Demand (million gallons per day), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3.
10	Peak Hour Recycled Water Demand (acre-feet), calculated as peak day demand divided by 8 hours of use per day.
11	Peak Hour Recycled Water Demand (million gallons per day), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.

APPENDIX C - INITIAL ENVIRONMENTAL DOCUMENTATION

Administrative Draft

SANTA CLARA VALLEY WATER DISTRICT – SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

SOUTH COUNTY RECYCLED WATER MASTER PLAN CONSTRAINTS ANALYSIS

January 16, 2004

Administrative Draft

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SOUTH COUNTY RECYCLED WATER MASTER PLAN CONSTRAINTS ANALYSIS

January 16, 2004

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203019

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

Santa Clara Valley Water Department (the District) in partnership with the South County Regional Wastewater Authority (SCRWA), is considering an expansion of the existing tertiary treated recycled water pipeline. The proposed expansion would be done in phases as described by the Draft South County Recycled Water Master Plan for the District developed by Carollo Engineering (Carollo). This study was undertaken to evaluate the environmental constraints or "fatal flaws" that may be associated with the new pipeline routes proposed to deliver tertiary treated recycled water to potential new users within the City of Gilroy service area.

This evaluation is based on review of pertinent background documentation, computer database searches and reconnaissance of the pipeline routes, consisting of windshield and ground survey using available access. Documents and persons consulted are listed in *Chapter 4, References.* *The Draft South County Recycled Water Master Plan (*Carollo 2004) identified proposed recycled water users and pipeline routes analyzed for this report. The proposed pipeline routes, totaling approximately 95,500 feet, are identified in Figure 1. All pipeline routes extend from the SCRWA WWTP and are located in and near the City of Gilroy CA.

The primary purpose of this analysis and the emphasis of this report are to evaluate possible environmental fatal flaws that could constrain implementation of each pipeline route. It is assumed that service to individual users would conform to Title 22 Requirements; therefore, service of recycled water to various land use types was not examined. A comparison of potential environmental impacts and identifying appropriate mitigation strategies for inclusion in project development is discussed in this report. Specific analysis topics include; land use and land use policy, traffic and circulation, visual/aesthetic resources, biological resources, cultural resources, hazardous materials, hydrologic resources, and geology and soils. For each of these issues, pipeline routes were evaluated by staff with respect to specified environmental criteria.

1.2 PROJECT BACKGROUND

The proposed project has been identified by SCRWA and the District as a means of increasing the flexibility and reliability of the existing reclaimed water distribution system in the Gilroy area. Increasing the availability of recycled water would enable SCRWA to continue pursuing new recycled water customers. The proposed project would upgrade the existing distribution system to accommodate up to 6 million gallons per day (mgd). This would equal the future expanded treatment system capacity of the SCRWA WWTP. Depending on the local market for recycled water in south Santa Clara County, future projects could increase recycled water deliveries from the SCRWA WWTP from current levels of less than 3 mgd to as much as 15 mgd.

SCRWA has provided limited recycled water service since installation of a recycled water distribution system in 1978. This facility, constructed as a joint project with the District in 1978, was designed to provide service to primarily agricultural interests on the west side of Uvas Creek. The distribution system capacity is approximately 3 mgd. Currently, the recycled water distribution system operates on an as-needed basis, supplying approximately 1.2 mgd of tertiary treated recycled water (maximum month demand) to the Eagle Ridge Golf Course, 0.11 mgd to the Christmas Hill Park, 0.13 mgd to the Obata farm in the vicinity of the SCRWA WWTP, and 0.10 mgd to Calpine-Gilroy Energy Center.

In the 1990s both agencies implemented recycled water policies and planning efforts. In 1993, the District's Board of Directors adopted a non-potable recycling policy which provides for the District's financial participation to encourage the development of non-potable recycling projects in the County.

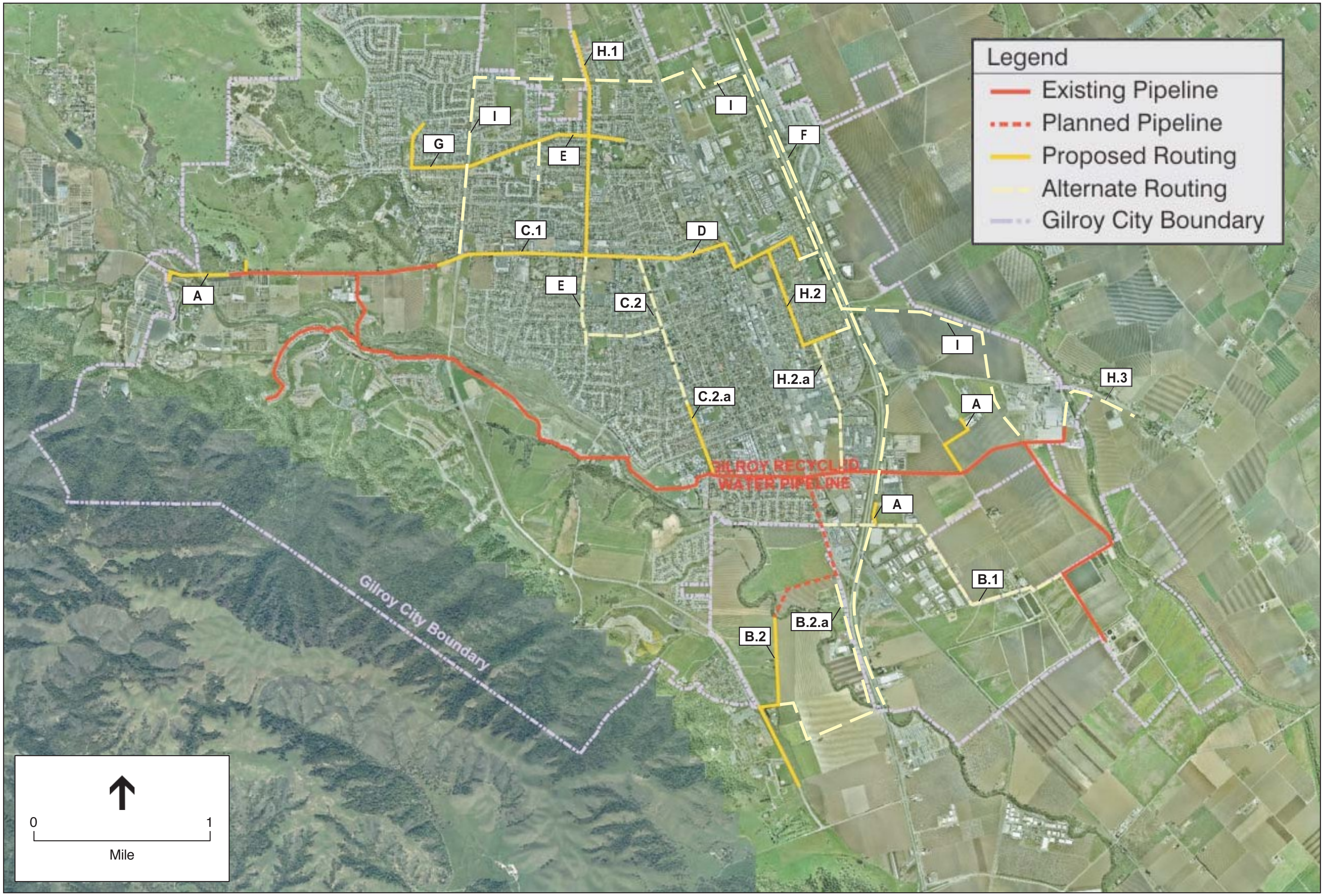
In 1995, SCRWA prepared a *Water Reclamation Planning Study* to further identify future recycled water demand and distribution system requirements. The modification of the existing pipeline and installation of a storage tank were identified as the first "building block" of the preferred scenario or Apparent Best Alternative (ABA). The *Water Reclamation Planning Study* included other components or "building blocks" to be implemented in the future as part of the ABA. These other components included expansion of existing facilities to provide recycled water to the following entities:

- neighboring properties which would not require a distribution system upgrade
- the Gavilan College area for which a dedicated pipeline would be installed
- municipal and industrial uses within the City of Gilroy, and agricultural uses north of the City of Gilroy

In 1997, the District prepared a 20-year planning document outlining potential strategies to meet demand in the Santa Clara Valley to the year 2020. The document, titled *Integrated Water Resources Plan*, included maximizing water recycling within the County as a key component.

1.3 PROJECT OBJECTIVES

The main objective of this project is to identify potential future recycled water users in South Santa Clara County, specifically in and near Gilroy. Water recycling continues to be a major component of water management planning in California and the use of recycled water would help limit demands on potable water use. The California Water Code, Section 13512 encourages development of water reclamation facilities to help meet the growing water demands of the State. The California Code of Regulations, Title 17 and Title 22, Division 4, Chapter 3, Sections 60301 through 60355 contain general Department of Heath Services recycled water regulations. These regulations designate wastewater treatment processes, effluent quality, and uses of recycled



SOURCE: Environmental Science Associates

SCVWD / 203019

Figure 1
Pipeline Alignment

water. Additionally, the City of Gilroy Draft General Plan identifies water reclamation as a priority in Policy 23.02 as follows:

> Policy 23.02. Water Reclamation Facilities. Encourage development of water reclamation facilities, where feasible, in order to make reclaimed water available to help meet the growing water needs of the South County Area.

1.4 PIPELINE ALIGNMENTS

For purposes of discussion, proposed pipeline facilities will be divided into the following nine groups based on potential user priorities as identified by Carollo and the District. A discussion of pipeline routes to serve these customers is provided. Where appropriate, pipelines have been broken down into segments to facilitate discussion. Proposed pipeline routes are shown in Figure 1.

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are located close to the existing SCRWA recycled water distribution facilities and pipelines.

GROUP B – GAVILAN COLLEGE AREA.

Service to this customer would use a combination of existing and new pipeline to extend from the SCRWA WWTP to the college facility west of U.S. Highway 101.

The following segment alignments would be used:

- **Pipeline B.1** would be installed from the SCRWA WWTP to the existing pipeline at Monterey Street. This would include installation west along Southside Drive, north along Rossi Avenue, and west along East Luchessa to the existing pipeline, which crosses under Highway 101.

- **Pipeline B.2.** This route would extend west from the existing pipeline and across agricultural fields along the proposed multi-use recreational trail identified in the 2002 Gilroy Trails Conceptual Master Plan, as part of the 2002 City of Gilroy Master Plan**.** Under the proposed Master Plan, a bridge would be installed over Uvas Creek, presenting an opportunity for pipeline attachment to cross the creek. Pipeline would then be installed within the trail to Santa Teresa Blvd., with tie-in to campus facilities.

- **Pipeline B.2a.** This alternate route would be installed south along Monterey Frontage Road, west across Uvas Creek and agricultural fields, west along Mesa Road, and south along Santa Teresa Blvd. to Gavilan College.

GROUP C – FIRST STREET LOOP

Service to this group would include new pipeline routes in existing streets.

- **Pipeline C.1.** This pipeline would extend from Wren Street west along First Street to meet the existing pipeline west of Conrotto Winery.
- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system.
- **Pipeline C.2.a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street and serve Glenview Elementary and Gateway School.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101, at the location of the new highway crossing for service to Gavilan College, or at the highway crossing for any new pipelines.

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, and would run west along Mantelli Drive and north along Calle del Rey.

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue.
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School.

- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used.
- **Pipeline H.3** would extend east along Pacheco Pass Highway to San Ysidro Elementary School.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control easements along Llagas Creek and Miller Slough. These facilities provide gravel access roads at top of embankment, and proposed pipelines would be installed within existing District right of way. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees. This type of alignment would need to be reviewed and approved by the District. This route would extend north from the SCRWA WWTP along Miller Slough, then west across Highway 101 along the existing flood control channel. On the west side of Highway 101, the pipeline would extend north and west along the channel to link up with proposed pipeline along north Santa Teresa Blvd. This pipeline group, suggested by the City of Gilroy Planning Department, would reduce pipeline installation within City of Gilroy roadways.

TABLE 1-1
SEGMENT PIPELINE ROUTES

Group A	Direct connections to existing line.
Group B	**B.1** Begin from WWTP on Southside Drive, west to Rossi Lane, north to Luchessa Avenue, and west on Luchessa to intersect with existing Monterey St. pipe. **B.2** Alternative route would extend from the existing pipeline across agricultural fields along the proposed multi-use recreational trail identified in the 2002 City of Gilroy Bike Master Plan **B.2a** Begin at end of existing Monterey St. pipe, extend south along Monterey Frontage Road and across field to intersect Mesa Rd., west along Mesa Rd. to Santa Teresa Blvd., continue south to Gavilan College and Gavilan Golf Course.
Group C	**C.1** New pipeline from Wren Street, west along First Street to meet the existing pipeline west of Conrotto Winery. New pipeline south along Princevalle Street to branch west on Fourth Street, and end at London Street. **C.2** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system. **C.2a** This alternate route limits the Princevalle Street pipeline from London Street to Eighth Street and serve Gilroy High School and Gateway School.
Group D	Begin First Street/ Princevalle, continue east to Monterey Street, south to IOOF, east to Murray Avenue, ending at San Ysidro Park.
Group E	Begin First Street/Wren Avenue, south to El Roble Park and north to Mantelli Drive, branch east to Las Animas Veteran's Park (near Eden Street), branch west to Kern Street, and continue south to Luigi Aprea school.
Group F	Median strips and along HWY 101 connecting to existing pipeline and be installed within the median strip.
Group G	Begin Mantelli and Kern, west on Mantelli to Calle Del Rey, and continue north to Del Ray Park.
Group H	**H.1** Begin Mantelli/Wren and continue north on Wren Drive to Farrell Avenue Park north of Farrell Avenue. **H.2 Begin** IOOF/Forest, south on Forest to7th St., south on 7th to Elliot School. **H.2a** Begin Seventh, extend south on Chestnut to existing pipe. **H.3** Begin at end of existing pipe branch east of Llagas Creek, continue northeast to parallel HWY 152 to San Ysidro School east of Frazier Lake Road.
Group I	Looped route beginning at the WWTP, north along Miller Slough, west to parallel HWY 101, to intersect with existing flood control channel, end at Santa Teresa Blvd.

CHAPTER 2

CONSTRAINTS ANALYSIS

SCRWA is evaluating 48 potential tertiary treated recycled water users who will be served through installation of 95,500 feet of new pipeline connected to the existing recycled water pipeline serving the Gilroy area. A preliminary engineering screening to identify preliminary sites was performed by Carollo utilizing geographic area, minimum available acres, and site topography. The following environmental analysis examines the proposed use areas and preliminary pipeline routes specified by the *draft* Master Plan for potential “fatal flaws”. The discussion for each issue area includes methodology, evaluation criteria, and identification of potential constraints to pipeline implementation. A summary table of the level of environmental constraints for each is presented at the end of each issue area discussion.

2.1 LAND USE AND LAND USE POLICY

The following land use discussion highlights key policies likely to be of concern to local land use agencies. It is not a comprehensive policy review, nor a formal public policy interpretation, which would typically include consultation with local planning agency staff. Potential inconsistencies with such policies relate to, but do not necessarily represent, physical environmental constraints to site development. The District, as a regional agency and utility district, is not subject to the land use and zoning designations of local jurisdictions for projects involving public utility uses. However, it is typical for a water supplier to work with the host jurisdiction(s) and the neighboring community during project planning and to conform to local land use plans and policies to the extent possible.

RELEVANT PLANS AND POLICIES

This discussion of major land use policies is based on a preliminary review of the City of Gilroy General Plan (2002). The General Plan denotes four categories of land use; residential, commercial, industrial, and other designations. The Land Use portion of the General Plan, defines the general pattern of future development for the City of Gilroy. The Land Use Plan Map covers the area within the “20-Year Boundary” of the General Plan. This is the area that the City expects to be serviced and developed in urban uses by the year 2020. The expansion pipeline does not interfere with any of the areas designated by the map.

Land use incompatibilities often result from other impacts of a project, such as noise and traffic. Growth inducement can also be characterized as an indirect land use impact. These issues would typically be discussed and evaluated in the Environmental Impact Report to be prepared once one or more apparent best alternatives have been selected. Where these types of impacts could contribute to a substantial constraint to development of an expanded recycled water distribution system, they are discussed under Land Use.

These policies would generally apply to all of the preliminary sites, and are generally focused on preservation of agricultural resources, open space and scenic resources. In addition to the criteria presented below, location and design of the pipeline should be consistent with these policies to the extent feasible.

AGRICULTURAL LAND DESIGNATIONS

The United States Department of Agriculture, Natural Resource Conservation Service employs a capability classification system to determine the suitability of soils for agriculture and limitations for cultivation. The soils are ranked on a scale from I to VIII, with Class I soils having the fewest limitations that restrict their use as farmland. The numerals indicate progressively greater limitations and narrower choices for practical use. The California Department of Conservation, Office of Land Conservation, maps important farmland throughout California. Important farmlands are divided into the following eight categories based on their suitability for agriculture:

- *Prime Farmland* is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.
- *Farmland of Statewide Importance* is land other than Prime Farmland, which has a good combination of physical and chemical characteristics for crop production.
- *Unique Farmland* is land that does not meet the criteria for Prime Farmland or Farmland of Statewide importance that has been used for the production of specific high economic value crops.
- *Farmland of Local Importance* is either currently producing crops, or has the capability of production, and does not meet the criteria of the categories above.
- *Grazing Land* is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing.
- The remaining three categories, *Urban and Built-Up Land*, *Other Land*, and *Land Committed to Nonagricultural Use*, do not define important farmlands.

METHODOLOGY AND CRITERIA

Land use issues considered in this evaluation are based on general principles put forth in *CEQA Guidelines Appendix G.* They include the following:

- Disruption of the physical arrangement of an established community
- Conflicts with established recreational, educational, or scientific uses in the area
- Inconsistencies with major land use policies related to protection of the physical environment

- Conversion of prime agricultural land to non-agricultural use or impairment of the land's agricultural productivity

The land use constraint to project implementation would be:

- **High Constraint** if the project would require extensive mitigation (or if mitigation may not be feasible) in order to achieve project compatibility with on-site and adjacent land uses
- **Moderate Constraint** if the project would require limited mitigation in order to achieve project compatibility with on-site and adjacent land uses
- **Low Constraint** if the project would require no or minimal mitigation in order to achieve project compatibility with on-site and adjacent land uses

PIPELINE ROUTE EVALUATION – LAND USE

A discussion of land use constraints for each pipeline route is presented below. **Table 2-1** provides a summary of land uses along the pipeline routes and identified potential constraint levels based upon the above criteria.

TABLE 2-1
PIPELINE LAND USE CONSTRAINTS

Location		Potential Constraints	City/County Designation	Constraint Determination
Group A		Limited residential Commercial/industrial to west Agricultural land to east.	Commercial/industrial, large parcel agricultural	Low
Group B	B.1	Commercial, agriculture	Commercial	Low
	B.2	Residential, agriculture uses, Uvas Creek crossing.	Residential, Agriculture	Moderate
	B2.a	Agriculture uses, Uvas Creek crossing, public lands.	Public lands, agriculture	Moderate
Group C	C.1	Commercial use, heavy traffic road.	Commercial	Moderate
	C.2/ C.2a	Residential mixed use.	Residential	Moderate
Group D		Residential	Residential	Moderate
Group E		Residential, commercial	Residential	Low
Group F		Freeway median	Public Lands	Low
Group G		Residential	Residential	Moderate
Group H		Residential, commercial	Mixed use	Low
Group I		Agricultural fields, HWY 101 Corridor, Wide Flood Control Channel corridor.	Mixed Use	Moderate

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. Land uses include large commercial facilities and large agriculture fields. Land use constraints are considered ***Low.***

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment extends from the SCRWA WWTP to the intersection of Monterey Street. This would include installation west within Southside Drive, west within Rossi Lane, and north within Luchessa Avenue to the existing SCRWA pipeline. Land uses along Southside Drive include agricultural lands to the south and north, with one residential use, the Auturo Ochoa Migrant Center. Land uses along Rossi Avenue include light industrial to the west and agricultural land to the east, with one residential unit. Land uses along Luchessa are commercial. Luchessa crosses under Highway 101 and includes one railroad crossing, which would require encroachment agreement. Due to the limited number of sensitive receptors, land use constraints along this segment are considered ***Low***.

- **Pipeline B.2.** This pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park. Pipeline installation across agricultural land under present conditions would result in temporary loss of row crop production on prime agricultural soils. Row crop production is allowed over District and SCRWA facilities currently; therefore, no long-term loss of agricultural production under current crop patterns would occur. However, future installation orchard crops would be limited over the pipeline route following installation. Pipeline installation in coordination with the multi-use trail would not be considered a conflict with the trail's proposed use, and represents a corridor opportunity both for pipeline installation and crossing of Uvas Creek. Installation of this segment would be dependant upon the timing of the multi-use trail installation by the City of Gilroy for implementation of land use constraints associated with this pipeline route are considered ***Moderate***.

- **Pipeline B.2.a.** Land uses along Monterey Street include light industrial to the north and south. These lands are designated as residential, commercial, and open space in the City of Gilroy General Plan. Land uses along Monterey Frontage Road, include existing residential subdivisions to the north, and agricultural lands to the south. This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The frontage road is a low use roadway comprised of two lanes with no shoulders, and dead ends prior to Uvas Creek. Two residential units are located on agricultural land uses to the west. From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road; then to Gavilan College. Due to the limited number of receptors, land use constraints are considered ***Low***.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline C.1.** This pipeline segment would extend from Wren Street west along First Street to meet the existing pipeline. Pipelines would be installed within existing streets in an established residential neighborhood. Due to the number of residential units along this segment, standard measures such as traffic control, construction hour limits, and dust control would be necessary. Therefore, land use constraints for this portion are considered ***Moderate.***

- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system. Therefore, land use constraints for this portion are considered ***Moderate.***

- **Pipeline C.2a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street, and serves Glenview Elementary and Gateway School. This would reduce short-term construction effects for that portion of the residential neighborhood and would utilize existing new pipeline installation along First Street. Land use constraints for this alternative are considered ***Low***.

GROUP D – I.O.O.F. AVENUE SPUR

This group of users would be served by a new pipeline along First Street east to serve San Ysidro Park and several schools in the vicinity. This section of pipeline crosses both Miller Slough and Llagas Creek, which may require permitting by state agencies, and includes one railroad crossing, which would require an encroachment agreement. Land use constraints for this segment are considered ***Moderate***.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. This segment of new pipeline would serve parks, schools, commercial buildings, and City owned facilities. Land use constraints are considered ***Low.***

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Land uses along this corridor are separated from the median by two lanes of freeway, and would not be affected by installation of low-diameter irrigation systems. Therefore, land use constraints associated with this pipeline group are considered ***Low***.

GROUP G – MANTELLI SPUR

- This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. This segment of new pipeline would serve primarily park land. This pipeline installation would be in existing roadways through residential areas. Therefore, land use constraints for this portion are considered ***Moderate.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue and is located in commercial land use areas and constraints are considered ***Low.***
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School. This route is located in commercial land use areas and constraints are considered ***Low***.
- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used. This route is located in commercial land use areas and constraints are considered ***Low***.
- **Pipeline H.3** would go east along HWY 152 to an old school site east of Frazier Road. Hwy 152 is a busy four lane highway. Land uses include large commercial facilities on the south and agriculture fields along both sides. Land use constraints are considered ***Low***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This alternate segment to loop the recycled delivery system follows an existing creek and slough which serve as the flood control channel for Gilroy. The beds of both waterways contain water of varying depths and are developed with vegetation. The sides of the waterways are mostly dirt and gravel with some sand bagging observed. An access road above the waterways varies in width from approximately 5’ to 12’ and is level with either gravel or dirt surfaces. The flood control channel crosses under several bridges, Highway 101, and railroad crossings. Miller Slough north, cross HWY 152 and continue to Llagas Creek, west to cross HWY101, north to cross HWY 152 and continue to flood control channel, northwest to cross Wren and intersect with Santa Teresa Blvd. This section of pipe crosses through agricultural land as designated in the 2000 General Plan.

Land uses along this pipeline route vary, with agricultural and open space areas predominant east of U.S. Highway 101, commercial areas along the segment that runs west of and parallel to U.S. Highway 101, and residential areas along the channel that extends east from the highway structure. Residential land uses generally back the flood control channels; therefore, construction activities would likely have short-term effects associated with noise, dust generation, and visual effects. These types of impacts would be temporary in nature, and could be reduced to the degree feasible through use of standard Best Management Practices (BMPs). Therefore, potential constraints associated with this pipeline group are considered ***Moderate.***

2.2 TRAFFIC AND CIRCULATION

In general, pipeline installation generates four types of traffic impacts; disruption of traffic flow due to roadway construction and traffic control; generation of vehicle trips due to construction worker and materials delivery; loss of parking due to contractor staging or worker parking; and disruption of access, including emergency, residential, and commercial access. These effects are limited to the duration of the construction activity, and are typically short-term in any one location due to the linear nature of pipeline construction. Typically, construction activities generate traffic volumes of 50 to 100 Average Daily Trips (ADT). The recycled water expansion pipeline will be installed along roadways within the City of Gilroy. A summary of roadways affected, lane configurations, and traffic volumes is presented in **Table 2-2,** below.

TABLE 2-2
PIPELINE ROUTE LANE CONFIGUTATION AND AVERAGE DAILY TRIPS

Group	Road	Lane Conf.	ADT	Location	Constraint
A.	HWY 152	4	25,500	e/o U.S. 101	Moderate
	Jamieson Way	2	NA	NA	Low
	Silacci Way	2	NA	NA	Low
B.1	Southside Dr.	2	NA	NA	Low
B.1	Rossi Ln.	2	NA	NA	Low
	Luchessa Av.		5,790	e/o U.S. 101	Low
B.2	Monterey Frontage	2	NA	NA	Low
B.2a	Mesa Rd.	2	2,520	NA	Moderate
	Santa Teresa Bl.	4	NA	NA	Moderate
C.1	First St./ HWY 152		360	Bet. 1st and 10th Sts.	Moderate
C.2	Fourth St.	2	320	w/o Princevalle St.	Moderate
C.2a	Princevalle St.		14,800	e/o Santa Teresa Blvd.	Moderate
			17,500	w/o Monterey St.	
D.	Monterey St.	4 with median	8,010	s/o 1st St.	Moderate
	IOOF Avenue	2	590	e/o Monterey St.	Moderate
	Murray Av,	2	NA	NA	Moderate
	Forest St.	2	NA	NA	Moderate
E.	Wren Av.	2-4	NA	NA	Moderate
	Mantelli Dr. (east)		5,085	e/o Wren Avenue	Moderate
	Kern St.	2	NA	NA	Moderate
F.	HWY 101	4-6	87,000	s/o SR 152 east	Moderate
G.	Mantelli Dr.(west)	2	5,840	w/o Wren Avenue	Moderate
	Calle Del Rey	2	640	n/o Mantelle Drive	Moderate
H, I	HWY 152 (east)	4	25,500	e/o U.S. 101	Low/Moderate

SOURCES: City of Gilroy Community Development Department, Engineering Division, 24-hour counts and extrapolated peak-hour counts; Santa Clara County Roads and Airport Department, 24-hour counts; Caltrans, *2001 Traffic Volumes on California State Highways*, 2003, Annual Average Daily Traffic Volumes

Pipeline Route Evaluation

A discussion of traffic constraints for each pipeline route is presented below. A summary of traffic issues along the pipeline routes and identified potential constraint levels are provided in **Table 2-2.**

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. Service to these connections would be via lateral installation, and would not affect traffic. Therefore, constraints are considered ***Low***.

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of traffic conditions along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment of extends from the SCRWA WWTP to the intersection of Monterey Street. This would include installation west within Southside Drive, north within Rossi Lane, and west within Luchessa Avenue to the existing SCRWA pipeline. Southside Drive is a two lane rural roadway that terminates at the SCRWA WWTP; ADT for this roadway are not available, but are anticipated to be less than 200 ADT. Construction within the roadway would require lane closure and alternating one-way traffic control to maintain access to the SCRWA WWTP and the Auturo Ochoa Migrant Center. Both Rossi Lane and Luchessa Avenue are two lane roadways with center turn-lanes for commercial and industrial uses. ADT data for Rossi Lane are unavailable, but is likely equivalent to Lucesa Avenue, which has an ADT volume of 5,790 trips. Traffic control along this roadway could utilize the center turn lane for a single lane push-over configuration to maintain two-way traffic. Due to the relatively low traffic volumes and available lane configurations, constraints associated with this route are considered ***low***.

- **Pipeline B.2.** This pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park. This alignment would avoid construction within large segments of Mesa Road and Santa Teresa Road, although some disruption of these roadways would likely be required for final connection. Due to the lack of traffic disruption, constraints associated with this pipeline route are considered ***Low***.

- **Pipeline B.2a.** Monterey Street west of U.S. Highway 101 is a two lane arterial with an ADT volume of 2,520 trips. The road is developed on the north with curb, sidewalk and bikelane associated with residential subdivisions, and undeveloped on the south. Construction on this road would likely require alternating one way traffic control. This roadway is a paved two lane rural road with no shoulders. This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The frontage road is a low use roadway comprised of two lanes with no shoulders, and dead ends prior to Uvas Creek. Pipeline installation would require lane closure and maintenance of access to the two residential units, but would not substantially affect traffic flow. From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road.

Mesa Road at this location is a hook-ramp 25 mph exit from U.S. Highway 101 to a two-lane rural roadway with no shoulders. ADTs at this location are 2,520 trips. Construction along this roadway would require lane closure and alternating one-way traffic control, and would also likely require exit ramp closure in coordination with Caltrans. Santa Teresa Road is a two lane arterial that provides service to Gavilan College and several new subdivisions. ADTs for this roadway were not available. Construction on this road would likely require alternating one way traffic control. Due to the traffic volumes and lane configurations, constraints associated with this route are considered ***Moderate.***

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. A discussion of traffic issues per pipeline segment is provided below. The street is two lanes wide with a shoulder and parking lane. Construction along this roadway would require lane closure and alternating one-way traffic control and traffic volumes are minimal.

- **Pipeline C.1.** The second portion of this pipeline segment would be installed west along First Street (HWY 152). This roadway is two to four lanes wide along a busy commercial area east of Santa Teresa Blvd., with residential west of Santa Teresa Blvd and along Princevalle. Construction along this portion would lane closures and traffic control. ADTs along this route are 14,800. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. ADTs along this route are 360. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

- **Pipeline C.2a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street and would utilize existing new pipeline installation along First Street. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. Portions of this segment are along two busy commercial streets which would require traffic control and lane closures. ADTs along this route range from 590 to 17,500. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. Residential land uses are located along the pipeline routes. The installation of this pipeline is primarily through residential and light commercial areas. Traffic control would be required. ADTs along this route range up to 5,085. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. ADTs along this route are 87,000. Due to traffic volumes and high visibility of construction activities, constraints are considered ***Moderate***.

GROUP G – MANTELLI SPUR

This group would be served by new pipeline from Wren Street west along Mantelli Drive and north along Calle del Rey. Residential land uses are located along the pipeline routes; therefore, construction activities would likely have short-term effects. ADTs along this route range from 640 to 5,840. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions; one north along Wren Avenue, a second south along Forest Street and east along Seventh Street, a third east along Pacheco Pass Highway. Residential land uses are located along the pipeline routes, and a fourth alternate route south on Chestnut Street from Seventh Street.

ADTs for this area are 25,500 and would require traffic control measures to be implemented. Due to the level of potential danger to construction workers, and high traffic volume, constraints are considered ***Moderate***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would use existing District flood control easements for pipeline installation. This would avoid construction related traffic effects associated with roadway installation. Roadway disruption and traffic control would be minimized compared to other pipeline routes. These routes also provide contractor layout and parking areas. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees. This type of alignment would need to be reviewed and approved by the District. Although these routes would still generate construction traffic associated with workers and materials, traffic constraints associated with use of existing flood control easements are considered **Low**.

2.3 BIOLOGICAL RESOURCES

Vegetation types and wildlife habitats were characterized on the basis of both records and field observations. Environmental Science Associates (ESA) conducted a limited reconnaissance of proposed pipeline routes on December 4, 2003 to identify the potential for habitat presence and gather information on vegetative communities, wildlife habitats, and potential habitat use. No species specific surveys were conducted (e.g., for California red-legged frog or vernal pool fairy shrimp) as a part of this analysis.

METHODOLOGY AND CRITERIA

Biological resource issues considered in this evaluation are based on general principles put forth in CEQA *Guidelines* Appendix G, and laws, regulations, guidelines and policies employed by the primary agencies charged with natural resources management (U.S. Army Corps of Engineers (USCOE), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG). Three categories of potential resources – wetlands, and special status plant or animal species – were analyzed. Further, in-depth surveys would be required as part of any CEQA review or additional permitting.

Biological resources (plants, animals, or sensitive habitats) would be considered:

- **High Constraint** if the project would affect known or highly likely locations of (and suitable habitat for) plant or animal species (individuals or populations) listed or currently proposed for listing by the state or federal government as endangered or threatened, where adequate mitigation would not be feasible or would entail considerable expense or delay. An example would be foraging habitat for the San Joaquin kit fox (endangered at the state and federal levels). In some cases, this constraint may be reached when, in addition to listed species issues, organisms with a “Species of Special Concern” (or other designation of rarity at the state level), are known to be present, or the site possesses vegetative resources that are considered to be (1) significant by the state or federal governments; (2) communities which, if degraded on-site, might result in a dramatic change in plant and wildlife patterns on-site and in the vicinity, or (3) protected by state or federal law or regulation (e.g., Section 404 of the Clean Water Act, Sections 1600-1607 of the California Fish and Game Code).

- **Moderate Constraint** if the project would affect known locations of (and suitable habitat for) plant or animal species (individuals or populations) listed by the state or federal government as endangered or threatened, or with other special status, where adequate mitigation for habitat *would* be feasible. An example would be a burrowing owl potential nesting site (California Species of Special Concern and protected under California Fish and Game Code 3503.5), mitigated by avoiding construction during the nesting season. This category includes vegetative resources as described above, when they are of insignificant size or extent (defined for the purposes of this analysis as <2,000 square feet).

- **Low Constraint** if the project site comprises areas with vegetative communities that are not protected, are generally common and widespread throughout the state, or which are severely degraded and which support animal species that are relatively common, or, if accorded special status, considered unlikely to occur.

PIPELINE ROUTE EVALUATION

The proposed pipeline routes are located within roadways or flood control easements that have been previously disturbed. Habitats along these routes are generally limited, although riparian corridors within the Gilroy area, including Uvas and Llagas Creek, do provide sensitive species habitat. **Table 2-3** provides a list of sensitive species potentially occurring within the Gilroy area, their habitat types, and the general location of potential habitat within the study area.

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. These customers would be served by 2-inch lateral connections within developed areas. Due to the lack of new pipelines or additional facilities in order to serve existing connections, constraints are considered ***Low***.

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of potential biological constraints along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment extends from the SCRWA WWTP to the intersection of Monterey Street within existing paved roadways. Land uses are agricultural production to the east, and commercial/industrial to the west. No undisturbed habitat occurs along this pipeline segment. Disturbed agricultural areas can provide potential nesting habitat for burrowing owl; therefore, construction outside of nesting season and/or implementation of pre-construction surveys would be required if final pipeline alignments or contractor staging areas were outside of paved roadway. No stream crossings were identified. Landscape trees along the alignment provide potential nesting and roosting habitat for raptors, and construction outside of the nesting season and/or implementation of pre-construction surveys to confirm absence of raptor nests would reduce potential effects. Therefore, biological resource constraints are considered ***Moderate***.

  Pipeline B.1 Recommended Measures:

  BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

  BIO-2. If final pipeline alignment is outside of paved areas, burrowing owl habitat assessment to identify potential habitat, extent of impact, and establishment of appropriate mitigation per most recent CDFG protocol, currently the *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995).

- **Pipeline B.2.** This pipeline would extend from the existing pipeline in Monterey Street to Gavilan College across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail. Disturbed agricultural areas can provide potential nesting habitat for burrowing owl; therefore, construction outside of nesting season and/or implementation of pre-construction surveys would be necessary for implementation. The mature riparian corridor at Uvas Creek provides potential habitat for all of the sensitive wildlife species identified in **Table 2-3** above. It is anticipated that the creek would be spanned by attachment to the existing roadway bridge, and that potential effects to this riparian corridor could be avoided. Alternatively, use of trenchless technologies, such as jack and bore or micro-tunneling, could be used to avoid effects. In the event that a trench crossing of the creek is necessary, the following regulatory permits would be required: USACOE 404 Permit, most likely a Nationwide Permit; CDFG 1601 Stream Bed

TABLE 2-3
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR WITHIN THE REGION

Scientific and Common Names	Listing Status FWS/DFG/ CNPS2	Habitat	Suitable Habitat Present in Area
Onchorhynchus mykiss irideus South-Central Coast ESU steelhead	FT/CS/C	Rivers and creeks with permanent water for spawning and rearing. Other habitats may serve as migration routes.	Llagas Creek, Uvas Creek
Ambystoma californiense California tiger salamander	PT/CS/C	Annual grasslands and grassy understory of valley-foothill hardwood habitats on central and northern California. Needs underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	Llagas Creek, Uvas Creek, and adjacent upland habitat.
Athene cunicularia Burrowing owl	FSC/C/SC	Grasslands, scrublands, deserts all with short vegetation. Depends on mammal burrows, especially those of California ground squirrel, for burrows. Subterranean nester.	Agricultural areas and foothills adjacent to property.
Clemmys marmorata Western Pond turtle	FSC/CSC	Ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg laying.	Llagas Creek, Uvas Creek
Rana aurora draytonii California red-legged frog	FT/CS/C	Mostly in lowlands and foothills in/near permanent sources of deep water, but will disperse far during and after rain. Prefers shorelines with extensive vegetation. Requires 11 to 20 weeks of permanent water for larval development.	Llagas Creek, Uvas Creek, and adjacent upland habitat.
Vireo bellii pusilluss Least Bell's viero	FE/SE	Mostly dense, foothill riparian areas and river beds containing willows. Summer resident of Southern California.	Llagas Creek, Uvas Creek and associated riparian areas.
Trifolium amoenum Showy Indian clover	FE/--	Foothill grasslands and serpentine soils, swales and occasionally found in roadside ditches and eroding cliff faces. Development may have eliminated population. Last occurrence 1903.	Agricultural areas and foothills adjacent to project.

Alteration Agreement, and RWQCB 401 Water Quality Certification. Additionally, issuance of the USACOE 404 Permit would require consultation with USFWS regarding impacts to listed species. Native trees within the Uvas Creek corridor and along the roadway alignment provide potential nesting and roosting habitat for raptors, and construction outside of the nesting season and/or implementation of pre-construction surveys to confirm absence of raptor nests would reduce potential effects. Therefore, biological resource constraints are considered ***Moderate.***

Pipeline B.2 Recommended Measures:

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-2. If final pipeline alignment is outside of paved areas, burrowing owl habitat assessment to identify potential habitat, extent of impact, and establishment of appropriate mitigation per most recent CDFG protocol, currently the *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995).

BIO-3. Use of trenchless technology at Uvas Creek crossing, including: bridge attachment, jack and bore, microtunneling, or other trenchless technology to avoid impacts to riparian and wetland area.

BIO-4. In the event trenchless technologies are not feasible, acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

- **Pipeline B.2.a.** This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The pipeline would extend from the terminus of the frontage route south, and would require crossing Uvas Creek to Mesa Road. This route then extends west along Mesa Road to Santa Teresa Boulevard with connection to the college system.

  From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road. Disturbed agricultural areas can provide potential nesting habitat for burrowing owl; therefore, construction outside of nesting season and/or implementation of pre-construction surveys would be required if final pipeline alignments or contractor staging areas were outside of paved roadway. The mature riparian corridor associated with the Uvas Creek provides potential habitat for all of the sensitive wildlife species identified in **Table 2-3** above. The creek channel at this location consists of an approximately 30 foot deep incised channel approximately 75-100 feet wide, populated with mature vegetation. Installation of the pipeline at this location using jack and bore methods would be difficult due to the depth of the stream bottom relative to the surrounding areas. Trench crossing of Uvas Creek at this location would require the following permits or agreements: U.S. Army Corps of Engineers (USACOE) 404 Permits (Nationwide Permit 12), California Department of Fish and Game (CDFG) 1601 Streambed Alteration Agreement and Regional Water Quality Control Board (RWQCB) 401 Water Quality Certification/Waiver. Additionally, consultation with the U.S. Fish and Wildlife Service (USFWS) regarding special status species would be required. Due to the depth of the creek channel at this location, the maturity of the vegetative assemblage, and the potential for sensitive species to be present, constraints are considered ***Moderate to High***.

Pipeline B.2a Recommended Measures

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-2. If final pipeline alignment is outside of paved areas, burrowing owl habitat assessment to identify potential habitat, extent of impact, and establishment of appropriate mitigation per most recent CDFG protocol, currently the Staff Report on Burrowing Owl Mitigation (CDFG, 1995).

BIO-3. Use of trenchless technology at Uvas Creek crossing, including: bridge attachment, jack and bore, microtunneling, or other trenchless technology to avoid impacts to riparian and wetland area.

BIO-4. In the event trenchless technologies are not feasible, acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system within residential areas of Gilroy. A discussion of potential biological constraints along each pipeline segment is provided below.

- **Pipeline C.1.** The second portion of this pipeline segment would be installed west along First Street (HWY 152). These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. No stream crossings occur along this alignment. Therefore, constraints are considered ***Low.***

- **Pipeline C.2.** This pipeline segment would be installed south along Princevalle to Fourth Street. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. No stream crossings occur along this alignment. Therefore, constraints are considered ***Low.***

- **Pipeline C.2a.** This alternative would limit pipeline to between London and Eighth Street. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. No stream crossings occur along this alignment. Therefore, constraints are considered ***Low***.

GROUP D – I.O.O.F. AVENUE SPUR

This group of users would be served by a new pipeline along First Street east to serve San Ysidro Park and branches off to several schools. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species.

This section of pipeline crosses both Miller Slough and Llagas Creek which may require permitting by state agencies, and includes one railroad crossing. It is anticipated that the creek would be crossed using trenchless technologies, such as jack and bore or micro-tunneling. In the event that a trench crossing of the creek is necessary, the following regulatory permits would be required: USACOE 404 Permit, most likely a Nationwide Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification. Additionally, issuance of the USACOE 404 Permit would require consultation with USFWS regarding impacts to listed species. Assuming the avoidance of creek disturbance, constraints are considered ***Low.***

Pipeline D Recommended Measures

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-4. In the event trenchless technologies are not feasible, acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing or proposed pipeline crossings of Highway 101. Conditions within the U.S. Highway 101 median are highly maintained, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low.***

GROUP G – MANTELLI SPUR

This group would be served by a new pipeline from Wren Street west along Mantelli Drive and north along Calle del Rey. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low***.

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions; one north along Wren Avenue, a second south along Forest Street and east along Seventh Street, a third east along Pacheco Pass Highway, and a fourth alternate route south on Chestnut Street from Seventh Street. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would use existing District flood control easements along the west branch of Llagas Creek through the City of Gilroy for pipeline installation. Biologic conditions along this reach of flood control channel reflect the District's maintenance practices, with vegetation control both in the channel and along the embankments. CNDDB database information does not differentiate between the main stem and western branch of Llagas Creek in terms of potential sensitive species presence. It is anticipated that proposed pipelines would be installed within the access roads along the flood control embankments. Depending upon the final pipeline disturbance area, and its relationship to the jurisdiction of each agency, proposed facilities could be installed without regulatory permits. However, given the proximity to potential habitat, it is anticipated that protocol-level surveys to determine the presence or absence of the wildlife species identified in **Table 2-3** would be required. Due to the alignments proximity to the west branch of Llagas Creek, the need for protocol-level survey, and the potential for regulatory permits, constraints are considered ***Moderate to High.***

> **BIO-1.** Avoidance of raptor nesting season or pre-construction raptor nest survey.
>
> **BIO-5.** Based upon final alignments, conduct habitat assessment for CRLF, CTS, and BOWL to identify potential for habitat occurrence.
>
> **BIO-6.** Confirm final alignments with respect to agency jurisdiction. Acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

2.4 VISUAL CONSTRAINTS

RELEVANT PLANS AND POLICIES

The existing visual quality of the general area is dominated by urban uses associated with the City of Gilroy. Except for three potential bridge crossings, the pipeline will be buried in existing roadways or fields. Due to the below-grade nature, potential impacts to views of the pipeline routes from would be limited to short-term effects during construction. Although this issue would require analysis in any CEQA documentation, it is not considered a significant differentiator between the individual routes.

METHODOLOGY AND CRITERIA

Scenic resource factors considered in this evaluation include the sensitivity of the affected views from public vantage points (views from designated scenic routes and views from (or of) recreation areas, open space, hillsides, and ridgelines designated as having scenic value are considered sensitive); the duration and distance of affected view points; the existing visual character of the site; and the aesthetic aspects of site development. Negative aesthetic attributes of site development can include alteration of land form, view obstruction, and introduction of elements that are incongruous with the surroundings. This approach derives from the CEQA Guidelines, which emphasize the importance of potential adverse impacts on public (as opposed to private) views. Presumed views from private viewpoints are also noted, for informational purposes.

The visual constraint to site development would be:

- **High Constraint** if the project would substantially impair or intrude on sensitive views and mitigation would have limited effectiveness.
- **Moderate Constraint** if the project would affect views but could be screened or otherwise reduced in visual prominence
- **Low Constraint** if the project would be hidden from sensitive view

PIPELINE ROUTE ANALYSIS

Proposed facilities identified under the Master Plan are limited to distribution pipeline installed primarily within roadways. Although visual conditions along the alignment would be altered during pipeline installation due to short-term construction activities, proposed facilities would not have a long-term effect on visual resources or aesthetics.

Pump stations, storage tanks, or other above ground facilities that could affect visual resources have not yet been identified as part of the Master Plan. Pump stations can typically be sighted and designed to be consistent with surrounding land uses, and through design, architectural and landscaping treatments, impacts are usually reduced to a less than significant level. Storage tanks ranging between 1.0 and 3.0 mgd are located within foothill areas to the west of the City of Gilroy, including SCRWA's existing recycled water storage tank. Visual impacts related to storage tanks are dependant upon site location, viewshed, screening/backdrop opportunities, facility design (above or below-ground design) and landscape design. In general, visual effects of storage tanks can be reduced to a less than significant level through proper siting and design measures.

2.5 CULTURAL RESOURCES

METHODOLOGY AND CRITERIA

An archival record search for the preliminary site locations was performed by Historical Resources Information System, Northwest Information Center at Sonoma State University. In addition to archaeological maps and site records on file at the Historical Resources Information Center (Northwest Information Center), major historic property listings were reviewed including the *Historic Properties Directory*, the *California Inventory of Historic Resources*, and the *General Land Office*, plus various historic literature pertinent to this area.

Native American archaeological sites in this portion of South Santa Clara County tend to be situated at the base of hills near sources of water; on the valley floor near sources of water; on stream terraces; and buried beneath a few inches to several feet below alluvial soils on the valley floor. Expected historical resources would include standing ranch and farm structures (more than 50 years old), archaeological sites, and features such as ruins, foundations, debris, trash dumps, wells, and privies. Contemporary Native American resources can include cemetery and burial sites, religious sites and features, and resource gathering areas.

METHODOLOGY AND CRITERIA

The "overall sensitivity" analysis is based on a combination of factors including the presence or absence of identified cultural resource sites, topographical features and landforms often associated with archaeological sites, and whether or not previous cultural resource surveys had been conducted.

- **High constraint** if there is a high likelihood for encountering or affecting a known cultural resource, and if construction activities would likely be interrupted for an extended period to enable onsite investigations and/or recovery programs by an archaeologist. For example, alignments located near creeks with previously identified cultural resources are considered as having "high" sensitivity.
- **Moderate constraint** if there is a possibility for encountering cultural resources based on the archival research and surface reconnaissance, and that limited mitigation, such as more focused archival research as well as a contingency mitigation program, would be necessary. For example, alignments that have been previously surveyed for cultural resources and that are located near creeks but that have few or no identified cultural resources is considered to have "moderate" sensitivity.
- **Low constraint** if there is a low potential for encountering cultural resources, but nevertheless a contingency mitigation program would be necessary in the event that cultural resources should be encountered. For example, alignments with few or no identified cultural resources located away from creeks are considered to have "low" sensitivity.

PIPELINE ROUTE EVALUATION

Review of records and literature on file at the Northwest Information Center, Sonoma State University for each pipeline route is summarized in **Table 2-4**. Alignments within fully developed, paved, and/or landscaped areas may not warrant cultural resources surveys because archaeological sites would not be visible on the surface. Developed areas including areas that are paved, landscaped, or otherwise built, may also have some level of sensitivity for cultural resources, but it is often infeasible to conduct intensive field studies to determine if archaeological sites are present. In those circumstances, provisions may be made to identify and protect cultural resources during construction. It is recommended that final alignments be reviewed with respect to previous surveys, and that standard provisions to protect cultural resources that may be discovered during construction be included in construction bid documents. Built areas may also contain historic buildings and structures, but since these types of resources are typically not impacted by construction or operation of pipelines, they have not been considered in this analysis.

Recommended Measures – All Pipelines

CR-1: Final pipeline alignments shall be confirmed with respect to previous surveys, and standard provisions to protect cultural resources, including stop work requirements, should be included in construction bid documents.

TABLE 2-4
CULTURAL RESOURCE CONSTRAINTS

Group		Previously Surveyed	Known Archaeological Sites Within ¼ Mile	Overall Sensitivity
Group A		100% Previously Surveyed	No site identified on alignment 3 sites within ¼ mile	Low
Group B	B.1	60% Previously Surveyed	None identified on alignment None identified within ¼ mile	Low
	B.2,B2a	100% Previously Surveyed	Two unrecorded sites on alignment Six sites within ¼ mile	High
Group C	C.1	No Previous Surveys	None identified on alignment Two sites within ¼ mile (Uvas Creek)	Low to Moderate
	C.2	30% Previously Surveyed	One unrecorded site on alignment	Moderate
	C.2.a	100% Previously Surveyed	None identified on alignment Two sites within ¼ mile	Moderate
Group D		10% Previously Surveyed	None identified on alignment One site within ¼ mile	Moderate
Group E		40% Previously surveyed.	None identified on alignment No sites within ¼ mile	Low
Group F		50% Previously surveyed.	Three sites identified along alignment Five sites within ¼ mile	Moderate
Group G		50% Previously surveyed.	No cultural resource sites have been identified on the alignment or within ¼ mile.	Low
Group H	H.1	100% Previously surveyed.	None identified on alignment	Moderate
	H.2	No Previous Surveys	One site identified on alignment	Moderate
	H.2a	No Previous Surveys	Two sites within ¼ mile	Moderate
	H.3	50% Previously surveyed	One site identified on alignment Two sites within ¼ mile	High
Group I		60% Previously surveyed	Three sites identified along alignment	High

GROUP A - DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. Approximately 100% of this alignment has been previously surveyed. No cultural resource sites have been identified along the preliminary alignment; three cultural resource sites have been identified within ¼ mile of the alignment. Therefore, constraints are considered ***Low.***

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of the potential for cultural resource effects along each pipeline segment is provided below.

- **Pipeline B.1.** Approximately 60% of this alignment has been previously surveyed. No cultural resources have been identified on this alignment or within ¼ mile. Therefore, constraints are considered ***Low***.
- **Pipeline B.2. and B.2a.** Approximately 100% of these two alignments have been previously surveyed for cultural resources. Two unrecorded sites have been identified along the proposed pipeline alignments, and six sites are located within ¼ mile. Due to the presence of two unrecorded sites, potential constraints are considered ***Moderate to High***.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. A discussion of the potential for cultural resources to occur along each pipeline segment is provided below.

- **Pipeline C.1.** No previous surveys along this alignment have been completed. Two cultural resource sites have been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***
- **Pipeline C.2.** Approximately 30% of this alignment has been surveyed, and no cultural resources have been identified along this alignment. Two cultural resource sites have been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***
- **Pipeline C.2.a.** Approximately 100% of this alignment has been surveyed, and no cultural resources have been identified along this alignment. Therefore constraints are considered ***Moderate.***

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. Approximately 10% of this alignment has been surveyed. No cultural resources have been identified along this alignment and one cultural resource has been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. No cultural resource sites have been identified along the alignment or within ¼ mile of this alignment. Therefore constraints are considered ***Low.***

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Approximately 50% of this alignment has been surveyed. Three cultural resource sites have been identified within or directly adjacent to this alignment and an additional five cultural resources have been identified within ¼ mile of the alignment. Therefore, constraints are considered ***Moderate.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. No cultural resource sites have been identified on the alignment or within ¼ mile. Therefore constraints are considered ***Low.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1.** No cultural resources have been identified on this alignment and one cultural resource has been identified within ¼ mile of the alignment. Therefore constraints are considered ***Low.***
- **Pipeline H.2.** One unrecorded cultural resource site has been identified on or adjacent to this alignment. Two other cultural resource sites have been identified within ¼ mile of this alignment. Therefore constraints are considered ***Moderate.***
- **Pipeline H.2a.** No cultural resources have been identified on this alignment and one cultural resource has been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***
- **Pipeline H.3.** One cultural resources site has been recorded on or adjacent to the alignment and two other cultural resources have been identified within ¼ mile of the alignment. Therefore, constraints are considered ***High.***

Group I – Flood Control Channel Alignment

This pipeline route would be installed to serve the above groups using existing District flood control facilities along Llagas Creek and Miller Slough. Three cultural resources have been identified within or directly adjacent to this alignment. Therefore constraints are considered ***High.***

2.6 WATER/HYDROLOGIC RESOURCES

INTEGRATED WATER RESOURCES PLAN

In 1993, the District's Board of Directors adopted a non-potable recycling policy which provides for the District's financial participation to encourage the development of non-potable recycling projects in the County. The District will provide financial assistance equivalent to the avoided cost of new water supplies for non-potable recycled water produced.

In 1997, the District prepared a 20-year planning document outlining potential strategies to meet water demand in the Santa Clara Valley to the year 2020. The document, titled *Integrated Water Resources Plan,* included maximizing water recycling within the County as a key component. The preferred strategy for County-wide water recycling called for a minimum of 6,000 acre-feet and up to 31,000 acre-feet of recycled water capacity, contingent upon potential partnerships with wastewater treatment agencies in the County. Non-potable water recycling projects currently in operation within the District service area include the San Jose/Santa Clara Recycling Project, Sunnyvale Recycling Water Project, Gilroy/Morgan Hill Recycling Project, and Palo Alto Recycling Project.

The RWQCB issued a Master Water Reclamation Requirements (MWRR) Order No. 98-052 to SCRWA in 1998 for the distribution of tertiary treated effluent for reclamation uses. The MWRR permits up to 15 mgd of disinfected tertiary recycled water to be distributed through the existing system to current users as well as to future users through new pipelines yet to be constructed. The MWRR states:

> a) The proposed recycled water project would be implemented as a measure encouraged by the California Department of Water Resources (California Water Code, Section 13512) to reduce demands on potable water including groundwater. The increased use of recycled water in the Santa Clara Valley would be a beneficial impact to the groundwater basin by providing additional water supplies to the region and contributing to groundwater recharge.

The California Water Code, Section 13521 states that the Department of Health Services (DHS) has the authority to "establish statewide reclamation criteria for each varying type of use of reclaimed water where such use involves the protection of public health." The MWRR requires that the effluent meet DHS water reclamation criteria (Title 22, Division 4, Chapter 3, Sections 60301-60355 of the California Code of Regulations). The MWRR includes monitoring and reporting requirements for SCRWA as well as for the indirect users. Indirect users are required to comply with the prohibitions and limitations outlined in the MWRR.

RECYCLED WATER QUALITY

The disinfected tertiary water produced at the SCRWA WWTP meets all Title 22 water quality requirements. Due to the successful use of recycled water by existing customers, the quality of the tertiary water will be sufficient for the new customers. Additionally, SCRWA conducts a training course for recycled wastewater users. The course instructs prospective users on the public health hazards and appropriate application methods for different land uses in an effort to maintain compliance with DHS criteria. Prior to receiving contracted recycled wastewater, customers must attend the training course.

The long-term use of recycled water for landscape irrigation poses potential impacts to surface water and groundwater quality. Typical water quality concerns for reclaimed water application sites include the potential of elevating nitrate levels in underlying groundwater and of increasing salt build-up in the root zones. Elevated salt build up over time has been proven harmful to turf grasses and associated park and golf course vegetation, forcing irrigators to stop using reclaimed water. **Table 2-5** summarizes the water quality parameter limits for the recycled water program contained in the MWRR.

TABLE 2-5
MASTER WATER RECLAMATION REQUIREMENTS - DISINFECTED TERTIARY RECYCLED WATER LIMITS

Parameter	Daily Max	30-day Mean
BOD (mg/l)	20	10
Total Suspended Solids (mg/l)	20	10
Nitrate as N (mg/l)	10	5

SOURCE: RWQCB, Master Water Reclamation Requirements, Order No. 98-052

In addition to these parameters, the MWRR requires the following:

Recycled water shall not have turbidity which exceeds the following limits:

- Daily average turbidity must be less than or equal to 2 NTU.
- Turbidity shall not exceed 10 NTU at any time.
- Turbidity must not exceed 5 NTU for more than five percent of the time.

Recycled water shall not contain total coliform concentrations exceeding the following limits:

- The seven day median concentration must not exceed a most probable number (MPN) of 2.2/100 ml.
- Concentrations must not exceed 23/100 ml in more than one sample taken over a 30-day range.
- Concentrations must be less than 240/100 ml at all times

Recycled water shall have a CT value (chlorine concentration times modal contact time) of not less than 450 mg-min/l at all times with a modal contact time of at least 90 minutes based on 9.0 mgd.

> Recycled water shall not exceed the Maximum Contaminant Levels established by the U.S. EPA for compounds listed in the MWRR.

The Central Coast RWQCB identifies the aquifer in the Gilroy area as the Gilroy-Hollister Valley Groundwater Basin. Beneficial uses of the Basin include drinking water supply. **Table 2-6** summarizes the drinking water standards and groundwater objectives for total dissolved solids (TDS) and nitrates.

TABLE 2-6
WATER QUALITY OBJECTIVES

	Drinking water standard[a]	Groundwater Quality Objective[b]
	--	
TDS (mg/l)	500	1,200
Nitrate as N (mg/l) ©	10	5

[a] TDS has a recommended secondary drinking water standard from California Code of Regulations (CCR) Title 22 Section 64449, nitrate has a primary drinking water standard from CCR Title 22 Section 64431

[b] Groundwater objectives from Central Coast RWQCB Water Quality Control Plan for Pajaro River Sub-basin at Hollister.

[c] Measured as nitrogen

SOURCE: RWQCB, Central Coast Region, Water Quality Control Plan; Title 22, Section 64449

The nitrogen in reclaimed water is generally beneficial to the surface vegetation, reducing the need for routine fertilizing. However, some nitrogen not used by the vegetation may penetrate beneath the root zone and enter the groundwater. This effect also occurs when inorganic fertilizers are routinely applied to landscaping. The effect is a result of landscape nutrient application irrespective of the use of reclaimed water. Landscape management practices can reduce the potential for excessive amounts of nitrogen permeating the groundwater through measured fertilizing practices. Generally, 50 to 60 percent of the applied nitrogen in reclaimed effluent is utilized by the plant crop or turf, 15 to 25 percent of the nitrogen is lost to volatilization and denitrification, and generally less than 10 percent is leached beyond the root zone.[1] The MWRR issued to SCRWA by the RWQCB restricts nitrogen in the recycled effluent to 5 mg/l as a 30-day mean. This is equivalent to the groundwater quality objectives established by the RWQCB and is less than the primary drinking water standard for nitrogen.

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[1] O'Connell Ranch Subsequent Environmental Impact Report, Revised Draft, 1992, Appendix I

The MWRR does not contain a recommended total dissolved solids (TDS) limit. Assuming that the effluent contains 600 to 700 mg/l TDS, landscape management practices can prevent salt build up by providing adequate drainage beneath the root zone.[2]

The *Water Reclamation Planning Study* prepared by SCRWA in 1995 provides recycled water quality criteria for specific applications such as irrigation and industrial processes. **Table 2-7** summarizes the existing SCRWA recycled effluent quality and Department of Water Resources guidelines for irrigation applications.

TABLE 2-7
SUMMARY OF WATER QUALITY CRITERIA FOR LANDSCAPE IRRIGATION

Parameter	**Desirable**[a]	**Acceptable**[b]	**Unacceptable**[c]	**SCRWA WWTP**[d]
Total Salts				
Total Dissolved Solids (mg/l)	<700	700-2,100	>2,100	620-820
Electrical Conductivity (dS/m)	<0.7	0.7-3.0	>3	1.2-1.3
Permeability				
Sodium (%) (e)	<60	60-75	>75	46-62
Adjusted Sodium Absorption Ratio (SAR)	<6	6-9	>9	4.1
Toxic Ions				
Boron (mg/l)	<0.5	0.5-1.0	>1.0	0.4-1.3
Chloride (mg/l)	<175	175-350	>350	146-167
Copper (mg/l)		≤0.2	>0.2	0.03
Nickel (mg/l)		≤0.5	>0.5	0.08
Zinc (mg/l)		≤5.0	>5.0	0.045
Cadmium (mg/l)		≤0.005	>0.005	<0.05
Bicarbonate (mg/l)		90-520	>520	451

[a] Desirable water quality is that considered to be safe and suitable for turf and most plants under varied conditions of soil or climate

[b] Acceptable water quality is that regarded as possibly harmful for certain plants or crops under certain conditions of soil or climate

[c] Unacceptable water quality is that considered as probably harmful to most plants and crops under certain conditions of soil or climate

[d] Range of values reported for the existing SCRWA WWTP effluent. Given here for comparison to the classifications. Note that reclaimed water quality may improve due to additional treatment.

[e] Percent sodium = 100 Na/(Na+Ca+Mg+K) all ions expressed in milliequivalents per liter.

SOURCE: SCRWA, *Water Reclamation Planning Study,* 1995; Department of Water Resources DWR Bulletin 104-7; and SCRWA Annual Report to RWCQB, 2001-2002.

The quality of SCRWA's effluent is within acceptable ranges for irrigation uses for all parameters except sodium absorption ration. This can be managed using several irrigation practices, including blending, increased irrigation frequency, or increased application to ensure appropriate salt management.

METHODOLOGY AND CRITERIA

Hydrologic resources considered in this evaluation are based on general principles put forth in CEQA *Guidelines* Appendix G, and laws, regulations, guidelines and policies employed by the primary agencies charged with the management of water quality protection (State Water Resources Control Board, U.S. Army Corps of Engineers, California Department of Fish and Game, and U.S. Fish & Wildlife Service).

The following hydrologic resource constraint criteria have been applied to the project locations.

- **High constraint** if there is a high likelihood of degrading water quality or altering flows within surface and ground water resources or creating a potential flood hazard given a mitigation program developed for the protection of water quality with approval of applicable government agencies.
- **Moderate constraint** if there is a possibility of degrading water quality, alteration of flows, or creating a potential flood hazard, and that limited off-site mitigation, such as wetland restoration, as well as a contingency mitigation program, would be necessary.
- **Low constraint** if there is a low potential for the degradation of water quality, alteration of flows or creation of a flood hazard, but a mitigation program would be necessary for the construction phase of the project.

PIPELINE SITE EVALUATION

A discussion of hydrologic constraints for each preliminary site is presented below. **Table 2-8** on the following page provides a summary surface water bodies along each of the pipeline routes and potential constraints.

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. No effects to surface or groundwater resources would be associated with installation of this level of facilities. Therefore, constraints are considered ***Low.***

TABLE 2-8
SUMMARY OF WATER RESOURCE CONSTRAINTS

Location		Surface Water Resources	Constraint Determination
Group A		None	Low
Group B	B.1	None	Low
	B.2	Uvas Creek crossing using multi-use bridge.	Moderate
	B2a.	Uvas Creek crossing, jack and bore.	Moderate
Group C	C.1	None	Low
	C.2	None	Low
	C.2a	None	Low
Group D		Llagas Creek crossing , jack and bore.	Moderate
Group E		None	Low
Group F		None	Low
Group G		None	Low
Group H		Miller Slough crossing using existing bridge.	Low
Group I		Installation along Llagas Creek flood control embankments.	Moderate

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment extends from the SCRWA WWTP to the intersection of Monterey Street. No surface water features are located along this alignment. Therefore, potential constraints are considered ***Low.***

- **Pipeline B.2.** This pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park, including crossing of Uvas Creek, At the crossing location, the pipeline would be located within the 100-year flood plain; however, due to its below grade nature, the pipeline would not be affected by surface flows. The trail represents a corridor opportunity both for pipeline installation and crossing of Uvas Creek. It is anticipated that the creek would be spanned by attachment to the existing roadway bridge, and that potential effects associated with trench installation, including sedimentation effects to Uvas Creek, would be avoided. Alternatively, use of trenchless technologies, such as jack and bore or micro-tunneling, could be used to avoid these effects. Installation below the scour depth of the creek would be required using these technologies. In the event that a trench crossing of the creek is necessary, regulatory permits would be required, as discussed in Section 2-4, and any final design should be reviewed for regulatory permit requirements. Therefore, water resource constraints are considered ***Moderate.***

- **Pipeline B.2.a.** This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The pipeline would extend from the terminus of the frontage route south, and would require crossing Uvas Creek to Mesa Road. At the crossing location, the pipeline would be located within the 100-year flood plain; however, due to its below grade nature, the pipeline would not be affected by surface flows. From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road. The creek channel at this location consists of an approximately 30 foot deep incised channel approximately 75-100 feet wide, populated with mature vegetation. Installation of the pipeline at this location using jack and bore methods would be difficult due to the depth of the stream bottom relative to the surrounding areas. Alternatively, use of trenchless technologies, such as jack and bore or micro-tunneling, could be used to avoid these effects. Installation below the scour depth of the creek would be required using these technologies. In the event that a trench crossing of the creek is necessary, regulatory permits would be required, as discussed in Section 2-4, and any final design should be reviewed for regulatory permit requirements. Such activity should be implemented during low flow period and include BMPs to reduce sedimentation effects downstream. Therefore, constraints are considered ***Moderate***.

  Pipeline B.2.a Recommended Measures

  WR-1. Use of trenchless technology at Uvas Creek crossing, including: bridge attachment, jack and bore, microtunneling, or other trenchless technology to avoid impacts to riparian and wetland area. Confirm final design with respect to regulatory permit requirements.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. This segment is along existing roadways. No surface waters were observed. Constraints are considered **Low**.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. This segment is along existing roadways and Llagas Creek. No surface waters were observed. Constraints are considered **Moderate.**

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. This segment is along existing roadways. No surface waters were observed. Constraints are considered ***Low***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Although portions of this alignment are located within the 100-year flood plain of Llagas Creek, facilities would not be affected due to their below-grade nature. Therefore, constraints are considered ***Low.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. This segment is along existing roadways. No surface waters were observed. Constraints are considered ***Low.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions;

- **Pipeline H.1** would extend north along Wren Avenue
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street
- **Pipeline H.2.a** would extend south on Chestnut Street from Seventh Street.
- **Pipeline H.3** would extend east along Pacheco Pass Highway.

This location begins east of Miller Slough and continues north across agriculture fields to HWY 152 and heads southeast to Frazier Lake Road. Segment H.2 would cross Miller Slough along an existing bridge. Although portions of this alignment are located within the 100-year flood plain, facilities would not be affected due to their below-grade nature. Therefore, constraints are considered ***Low.***

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control facilities along Llagas Creek and Miller Slough. It is anticipated that proposed pipelines would be installed within the access roads along the flood control embankments, providing separation between construction areas and surface waters. It is recommended that construction take place during the low-flow season to minimize the potential for sedimentation to occur, and that standard BMPs be used for erosion control. Pipelines would be located within the 100-year flood plain of Llagas Creek, and would be potentially subject to erosional forces during high flow events. As previously noted, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees, due in part to issues related to long-term maintenance and potential exposure of pipelines during high flow events due to erosion. Therefore, constraints are considered ***Moderate.***

2.7 ENVIRONMENTAL CONTAMINATION

Hazardous substances are materials with certain chemical and physical properties that may pose a substantial hazard to human health or the environment when improperly handled, stored, disposed or otherwise managed. They are commonly used in commercial, agricultural, and industrial applications and, to a lesser extent, in residences. If improperly handled, hazardous substances can result in public health hazards through contamination of soils or groundwater, or through airborne releases in vapors, fumes, or dust.

If hazardous substances are present at a development site, they may not pose a threat to human health or the environment if left in place, but could also pose a threat if contaminated materials become airborne or are otherwise released during construction activities. The contaminated material may also require special handling and disposal requirements if removed from the site.

METHODOLOGY AND CRITERIA

To assess the potential presence of hazardous substances at each site, a computer database search was conducted to identify (a) known or suspected sites where contamination of soils or groundwater may exist, (b) sites permitted to handle hazardous wastes under the Resource Conservation and Recovery Act (RCRA), and (c) sites with permitted underground storage tanks (Environmental Data Resources, 1998). The information is not intended to provide detailed site-specific information regarding contaminated sites or remediation efforts throughout the study area. Instead, the information serves as a basis for identifying potential constraints on planned construction due to the presence of hazardous substances within the development sites. No site reconnaissance of the preliminary sites was performed. As such, this analysis does not quality as a Phase I Environmental Site Assessment. However, the records search meets the government requirements of ASTM Standard practice for Environmental Site Assessments, E 1527-97.

If a site has known or potential contamination on site, the impact to site development would be:

- **High Constraint** if hazardous materials contamination is known to exist on site, or there is a high likelihood of encountering hazardous materials contamination during construction. A remediation program would likely be necessary to meet regulatory requirements, and there could be substantial delays to project implementation.
- **Moderate Constraint** if there is some evidence to indicate that hazardous materials contamination may be present and that additional investigations may be warranted. This could include a more detailed site history assessment or on-site soil sampling.
- **Low Constraint** if the there is little or no potential for encountering hazardous materials contamination during construction, based on existing and historical land uses.

The potential for encountering hazardous material contamination still exists even for sites that are ranked as having a low constraint. For these sites, it would still be necessary to include appropriate precautions in contractor specifications, such as site safety plans and emergency response plans, in the event that hazardous materials are encountered.

PIPELINE SITE EVALUATION

A discussion of hazardous materials constraints for each preliminary site is presented below. **Table 2-9** provides a summary of individual site characteristics and various constraints identified for each site.

GROUP A – EXISTING CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. These segments include one California Hazardous Material Incident Report System (CHMIRS) case. Constraints are ***Low.***

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment of extends from the SCRWA WWTP to the intersection of Monterey Street. One CHMIRS case has been reported at the intersection of Luchessa Avenue and Highway 101, and one Cortese site is near the intersection. Constraints are considered ***Low.***
- **Pipeline B.2.** The pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park. No know hazardous sites. Constraints are ***Low.***
- **Pipeline B.2.a.** This segment includes a bridge crossing over Uvas Creek. Land uses along Santa Teresa Blvd, which extends south to Gavilan College, are currently agricultural lands to the east and west. One unclosed Leaking Underground Storage Tank (LUST) at the southern portion of Santa Teresa Boulevard and one Resource Conservation and Recovery Information System site exists within this segment. Constraints are considered ***Low.***

GROUP C – FIRST STREET LOOP

Service to this group would include new pipeline routes in existing streets. This alignment of pipes contains several known hazardous contamination sites including; one RCRIS case, two UST cases, and two CA FID UST cases. Specific hazards to segments are described below.

- **Pipeline C.1.** This pipeline would extend from Wren Street west along First Street to meet the existing pipeline west of Conrotto Winery. This segment includes four LUST site and one Cortese case. Constraints are considered ***Moderate.***
- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system. This segment has one LUST case. Constraints are considered ***Moderate.***

TABLE 2-9
SUMMARY OF KNOWN HAZARDOUS MATERIAL CONTAMINATION SITES

Location	Known Hazardous Material Usage/ Release in the Immediate Area	Constraint Determination
Group A	One CHMIRS case.	Low
Group B	B.1 One Cortese site near intersection of Luchessa and Hwy 101: no information on Cortese case available	Low
	B.2 None	Low
	B.2.a One LUST at southern point on Santa Teresa Blvd: the case has not yet been closed	Low
	Also, 1 RCRIS case;	
Group C	C.1 4 LUST cases toward western end of First Street	Moderate
	1 Cortese case to the NE of the intersection of Princevalle and Fourth	
	C.2 1 LUST case at Princevalle and Sixth	Moderate
	C.2.a None	Low
	Also, 1 RCRIS case; 2 UST cases; and 2 CA FID cases (USTs)	
Group D	open LUST case at Rosanna and First Streets	Moderate
	closed LUST cases at Hwy 101 and First Street	
	1 closed and 1 open LUST case at Hwy 101 and First Street	
	Also, 2 RCRIS cases; 1 UST case; 4 CA FID cases (USTs)	
Group E	1 CA FID (UST) case and 1 CHMIRS case at Willard and Wren	Low
Group F	2 RCRIS; 1 HAZNET; 1 ERNS; 3 CHMRIS; 3 UST; 1 open LUST; 1 open LUST/Cortese	High
Group G	None	Low
Group H	H.1: 2 open LUST cases at Latum Ave and Wren	Moderate
	H.2:1 closed LUST case; 1 RCRIS; 1 FINDS; 1 Calsites; 2 HAZNET; 2 open LUST cases; 1 CA FID (UST); 1 HIST UST	Moderate
	H.2a 4 RCRIS; 1 CHMIRS; 2 Cortese cases; 4 LUST (2 open, 3 closed); 2 USTs; 6 HAZNET	Moderate/High
	8c: 2 CHMIRS cases; 1 LUST case (closed in 1993)	Moderate
Group 9	1 CA FID (UST) and 1 CHMIRS	Low
	1 HAZNET; 4 RCRIS; 1 Cortese; 2 open LUST cases; 1 ERNS	High
	1 closed LUST case/Cortese/HAZNET	Low

TABLE 2-9 (continued)
SUMMARY OF KNOWN HAZARDOUS MATERIAL CONTAMINATION SITES

Table 2-9 Definitions:

CHMIRS: The California Hazardous Material Incident report System (CHMIRS) contains information on reported hazardous material incidents, i.e., accidental releases or spills.
LUST: Leaking Underground Storage Tank (LUST) contains an inventory of reported leaking underground storage tank incidents. The data comes from the State Water Resources Control Board.
RCRIS: Resource Conservation and Recovery Information System (RCRIS) includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act.
CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations.
Calsites: Contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Abuse.
ERNS: Emergency Response Notification System (ERNS) is a national computer database used to store information on unauthorized releases of oil and hazardous substances. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration's John Volpe National Transportation System Center and the National Response Center.
FINDS: Facility Index System/ Facility Identification Initiative Program Summary Report – Contains both facility information and "pointers" to other sources that contain more detail.
HAZNET: HAZNET is a DTSC database that records annual hazardous waste shipments, as required by RCRA. All businesses that use and dispose of hazardous materials are entered into the HAZNET database, and each occurrence of a disposal and/or transfer of a hazardous waste is entered into the database as a record.
HIST UST: A database of registered historical underground storage tanks

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- **Pipeline C.2.a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street, and serves Glenview Elementary and Gateway School. No known sites. ***Low.***

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. This group of pipelines contain; one open LUST case, several closed LUST cases; two RCRIS cases; two UST cases; and two CA FID cases. Constraints are considered ***Moderate.***

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue This segment contains one CA FID UST case and one CHMIRS case. Constraints are considered ***Low.***

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101, at the location of the new highway crossing for service to Gavilan College, or at the highway crossing for any new pipe. This location contains several known hazardous contamination sites. They are as follows: two RCRIS; one HAZNET (annual hazardous shipments); one ERNS (unauthorized releases of oil and hazardous substances); three CHMRIS; 3 LUST; and one open LUST/Cortese case. Constraints are considered ***High.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. No known hazardous material contamination sites exist for this segment. Constraints are considered ***Low.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue. This segment has two open LUST cases. Constraints are considered ***Moderate.***
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School. This segment includes: one closed LUST case; one FINDS (pointer to other source for details); one Calsites (potential or known hazardous site); two HAZNET; two open LUST sites; one CA FID UST; and one Historical Underground Storage Tank (HIST UST). Constraints are considered ***Moderate.***
- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used. This segment includes: four RCRIS; one CHMIRS, two Cortese cases; four LUST (two open and two closed); two USTs; and six HAZNET. Constraints are considered ***Moderate/High.***
- **Pipeline H.3** would extend east along Pacheco Pass Highway to San Ysidro Elementary School. This segment includes two CHMIRS cases, and one closed LUST case. Constraints are considered ***Moderate.***

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control easements along Llagas Creek and Miller Slough. These facilities provide gravel access roads at top of embankment, and proposed pipelines would be installed within existing District right of ways. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees. This type of alignment would need to be reviewed and approved by the District. It is anticipated that proposed pipelines could be installed outside of Corps and CDFG jurisdiction. However, final pipeline design may require regulatory permits. This route would extend north from the SCRWA WWTP along Miller Slough, turn west and cross HWY 101 along the existing flood control channel, continue on the west side of HWY 101 going north along the channel (see Group 6), follow channel west to link up with proposed pipeline along north Santa

Teresa Blvd. This pipeline group, suggested by the City of Gilroy Planning Department, would reduce pipeline installation with City of Gilroy roadways.

This route includes: one CA FID UST case; one CHMIRS; one HAZNET; four RCRIS; one Cortese case; two open LUST cases; one ERNS; and one closed LUST/Cortese/HAZNET case. Constraints range from ***Low to High.***

2.8 GEOLOGY AND SOILS

The proposed project area is located approximately seven miles northeast of the San Andreas fault, three miles northeast of the Sargent fault, and four miles southwest of the Calaveras fault. The San Andreas and Calaveras faults are classified as active, and the Sargent fault is considered potentially active (Jennings, 1994). Because of the earthquake history of the San Francisco and Monterey Bay regions and earthquake recurrence intervals, it is probable that the project area would experience strong ground shaking during the design life of the proposed pipeline alignment. However, it is likely that seismically-induced ground shaking would create an insignificant risk of damage if design features of the pipeline are in compliance with seismic requirements of the current Uniform Building Code (UBC). The proposed project does not lie within the designated Alquist-Priolo “Earthquake Fault Zone” for fault rupture hazard, therefore, the potential for surface rupture is low. The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) (formerly known as the Soil Conservation Service) has identified soils in the project area and their characteristic engineering properties applicable to this project. Characteristics applicable to this study include shrink-swell potential, corrosivity, whether the soil is considered part of Prime Farmland or Farmland of Statewide Importance, and the potential for the soil to be classified as serpentinitic (serpentine-rich), and thus, a source of naturally-occurring asbestos. A summary of these characteristics is provided in **Table 2-10**.

SHRINK-SWELL POTENTIAL

Shrink-swell potential, or expansivity, is the cyclic change in volume that occurs in fine-grained sediments because of the expansion and contraction of clay caused by wetting and drying. Shrink-swell characteristics identified by the NRCS are for undisturbed soils, generally in the upper five feet of a soil profile. The magnitude of shrink-swell potential (low, moderate, or high) is determined by the linear extensibility of a soil. In general, shrink-swell potential along the proposed pipeline alignment is considered moderate to high (**see Table 2-10**) (USDA NRCS, 1974). A description of these identifiers is below.

The shrink-swell potential is considered:

- **Low** if the soil has a linear extensibility of less than 3 percent
- **Moderate** if the soil has a linear extensibility of 3 to 6 percent
- **High** if the soil has a linear extensibility of 6 to 9 percent
- **Very High** if more than 9 percent

TABLE 2-10
SEGMENT PIPELINE ROUTES AND UNDERLYING SOIL PROPERTIES

Group Number	Underlying Soils and/or General Description of Geology		Shrink-Swell Potential	Corrosivity	Is this soil considered Prime Farmland?	Is this soil considered Farmland of Statewide Importance?	Potential Serpentine-rich Soil?
Group A	Group A (Jamieson) Yolo silty clay loam, 0-2% slopes (YeA)		Moderate	Moderate	Yes	No	No
	Group A (Silacci) Sunnyvale silty clay, drained (Sv)		High	High	Yes	No	No
Group B	Group B.1	Sunnyvale silty clay, drained (Sv)	High	High	Yes	No	No
		Campbell silty clay, muck substratum (Ce)	Moderate-High	High	No	Yes	No
		Campbell silty clay loam (Ca)	Moderate	High	Yes	No	No
		Yolo silty clay loam, 0-2% slopes (YeA)	Moderate	Moderate	Yes	No	No
	Group B.2 mostly Yolo loam, 0-2% slopes (YaA), small portions of PpC, PpA, PoC, ZbA, SdA		Moderate-High	Low-High	YaA (yes), PpC (yes), PpA (yes), PoC (yes), ZbA (yes), SdA (no)	No	No
	Group B.2a mostly Yolo loam, 0-2% slopes (YaA), small portions of PpC, PpA, PoC, ZbA, SdA		Moderate-High	Low-High	YaA (yes), PpC (yes), PpA (yes), PoC (yes), ZbA (yes), SdA (no)	No	No
Group C	Group C. 2/2.a	San Ysidro loam, 0-2% slopes (SdA)	Moderate-High	Moderate-High	No	Yes	No
		San Ysidro, acid variant (SfC)	Moderate-High	Moderate-High	No	Yes	No
		Pleasanton gravelly loam, 0-2% slopes (PpA)	Moderate	Moderate	Yes	No	No
		Pleasanton loam, 2-9% slopes (PoC)	Moderate	Moderate	Yes	No	No
		small portions of LoE, SaE2, Rg, GaA, YaB	Low-High	Low-High	LoE (no), SaE2 (no), Rg (no), GaA (yes), YaB (yes)	LoE (no), SaE2 (no), Rg (no), GaA (no), YaB (no)	No
	Group C.1	Commercial and/or residential development (soil has been disturbed)	n.a.	n.a.	n.a.	n.a.	n.a.
Group D	San Ysidro loam, 0-2% slopes (SdA)		Moderate-High	Moderate-High	No	Yes	No
	Pleasanton loam, 0-2% slopes (PoA)		Moderate	Moderate	Yes	No	No
	Zamora clay loam, 0-2% slopes (ZbA)		Moderate	Moderate	Yes	No	No

TABLE 2-10 (continued)
SEGMENT PIPELINE ROUTES AND UNDERLYING SOIL PROPERTIES

<table>
<tr><th>Group Number</th><th colspan="2">Underlying Soils and/or General Description of Geology</th><th>Shrink-Swell Potential</th><th>Corrosivity</th><th>Is this soil considered Prime Farmland?</th><th>Is this soil considered Farmland of Statewide Importance?</th><th>Potential Serpentine-rich Soil?</th></tr>
<tr><td>Group D</td><td colspan="2">Yolo silty clay loam, 0-2% slopes (YeA)</td><td>Moderate</td><td>Moderate</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td>Group E</td><td colspan="2">Commercial and/or residential development (soil has been disturbed)</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td></tr>
<tr><td rowspan="7">Group F</td><td colspan="2">Yolo silty clay loam, 0-2% slopes (YeA)</td><td>Moderate</td><td>Moderate</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Campbell silty clay loam (Ca)</td><td>Moderate</td><td>High</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Campbell silty clay, muck substratum (Ce)</td><td>Moderate-High</td><td>High</td><td>No</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">Zamora clay loam, 0-2% slopes (ZbA)</td><td>Moderate</td><td>Moderate</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Pleasanton gravelly loam, 0-2% slopes (PpA)</td><td>Moderate</td><td>Moderate</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">San Ysidro loam, 0-2% slopes (SdA)</td><td>Moderate-High</td><td>Moderate-High</td><td>No</td><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">Pleasanton loam, 0-2% slopes (PoA)</td><td>Moderate</td><td>Moderate</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td>Group G</td><td colspan="2">Commercial and/or residential development (soil has been disturbed)</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td></tr>
<tr><td rowspan="5">Group H</td><td colspan="2">Group H.1 Commercial and/or residential development (soil has been disturbed)</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td></tr>
<tr><td colspan="2">Group H.2/H.2a Commercial and/or residential development (soil has been disturbed)</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td></tr>
<tr><td rowspan="3">Group H.3</td><td>Campbell silty clay loam (Ca)</td><td>Moderate</td><td>High</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td>Yolo loam, 0-2% slopes (YaA)</td><td>Moderate</td><td>Low</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td>Pacheco clay loam, gravelly substratum (Pe)</td><td>Low-Moderate</td><td>Low-High</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td rowspan="4">Group I</td><td colspan="2">Sunnyvale silty clay, drained (Sv)</td><td>High</td><td>High</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Clear Lake clay, drained (Ch)</td><td>High</td><td>High</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Zamora clay loam, 0-2% slopes (ZbA)</td><td>Moderate</td><td>Moderate</td><td>Yes</td><td>No</td><td>No</td></tr>
<tr><td colspan="2">Commercial and/or residential development (soil has been disturbed)</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td><td>n.a.</td></tr>
</table>

If the linear extensibility is more than 3 percent, shrinking and swelling can trigger erosion, cause damage to buildings, roads, structures, and plant roots. Depending on the soil in which a particular pipeline segment is to be installed, proper engineering must take into account the possibility of shrink-swell behavior. It is also important to note that urban development in many of the areas of the proposed project has reworked or removed most of the upper five feet of soil, reducing or eliminating shrink-swell characteristics.

CORROSIVITY

Corrosivity is the process of a soil reacting chemically with concrete, metal, or alloy (in the case of the NRCS, uncoated steel), resulting in a metal oxide or corrosion product which weakens and/or deteriorates the substance. The rate of this chemical reaction is largely dependent on the physical, chemical, and biological characteristics of the soil, as well as the material in contact with the soil. In general, corrosivity of the soils along the proposed pipeline alignment is considered low to high (see **Table 2-10**) (USDA NRCS, 1974). A description of these identifiers is below.

The corrosivity of a soil is considered:

- **Low** if the soil causes a relatively low rate of corrosion of a buried utility
- **Moderate** if the soil causes a relatively moderate rate of corrosion of a buried utility
- **High** if the soil causes a relatively high rate of corrosion of a buried utility

Depending on the soil in which a particular segment is to be installed, proper site-specific engineering must take into account the corrosivity of the soil in order to reduce and/or eliminate the possibility of long-term corrosion to underground utilities and pipelines. Material used in the pipeline manufacture can also have an effect on rates of corrosion. Plastic or another corrosion-resistant material will slow the process of corrosion, while uncoated steel or metal will hasten the process. It is also important to note that urban development in many of the areas of the proposed project has reworked or removed most of the upper five feet of soil, which can fundamentally change the corrosivity properties of the soil in those areas. Pipeline material and installation must meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies.

PRIME FARMLAND AND FARMLAND OF STATEWIDE IMPORTANCE

Prime Farmland, as defined by the NRCS, is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed. Farmland of Statewide Importance is land other than Prime Farmland which has a good combination of physical and chemical characteristics for crop production. **Table 2-10** indicates which soils in the project area are Prime Farmland soils or Farmland of Statewide Importance soils (USDA NRCS, 1995). Depending on the soil in which a particular pipeline segment is to be installed, the project sponsor must consider if loss of either of these types of soils will occur. Conversion of either of these types of soils is considered a potentially significant impact under Appendix G of the California Environmental Quality Act (CEQA). However, the soils in many areas of the proposed project have been subjected to urban development for many years and therefore has undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland no longer exist under development conditions.

SERPENTINITIC SOILS

Ultramafic rocks, or rocks which contain predominant amounts of the dark minerals olivine, augite, and hypersthene, can be altered to form serpentinite under high temperature conditions. Sometimes these conditions favor the formation of naturally-occurring asbestos, which can be exposed in bodies of ultramafic rocks at Earth's surface. These rocks, in turn, can serve as the source of sediment for serpentinitic soils. All soils in which the proposed pipeline alignment is to be installed are derived from sedimentary sources, not serpentinitic sources. Furthermore, Churchill and Hill (2000) do not locate any of the proposed pipeline alignments in an area of exposed ultramafic rocks, where naturally-occurring asbestos would occur. Therefore, the chance of encountering serpentinitic rock or asbestos is extremely low.

METHODOLOGY AND CRITERIA

A discussion of geology and soils constraints for each pipeline route is presented below. Geology and soils issues considered in this evaluation are based on general principles put forth in *CEQA Guidelines Appendix G.*

The geology and soils constraint to project implementation would be:

- **High Constraint** if the project would require extensive mitigation (or if mitigation may not be feasible) in order to achieve project compatibility with on-site and adjacent geology and soils
- **Moderate Constraint** if the project would require limited mitigation in order to achieve project compatibility with on-site and adjacent geology and soils
- **Low Constraint** if the project would require no or minimal mitigation in order to achieve project compatibility with on-site and adjacent geology and soils

PIPELINE ROUTE EVALUATION – GEOLOGY AND SOILS

GROUP A - DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines.

- **Pipeline A (Jamieson Road)** This pipeline segment will be installed entirely within the Yolo silty clay loam (0-2 percent slopes) which is defined by the USDA NRCS (1974) to have moderate shrink-swell potential and moderate corrosivity. The soil is also defined by USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline A (Silacci Way)** This pipeline segment will be installed entirely within the Sunnyvale silty clay (drained) which is defined by the USDA NRCS (1974) to have high shrink-swell potential and high corrosivity. The soil is also defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation.

- **Pipeline B.1.** Pipeline B.1 will be installed within the Sunnyvale silty clay (drained), the Campbell silty clay (muck substratum), the Campbell silty clay loam, and the Yolo silty clay loam (0-2 percent slopes), which are defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. The Sunnyvale silty clay (drained), the Campbell silty clay loam, and the Yolo silty clay loam (0-2 percent slopes) are also defined by the USDA NRCS (1995) as Prime Farmland, and the Campbell silty clay (muck substratum) is defined as a Farmland of Statewide Importance (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland and/or Farmland of Statewide Importance disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline B.2.** Pipeline B.2 will be installed within a variety of soils, including dominantly the Yolo loam (0-2 percent slopes) and small portions of the Pleasanton gravelly loam (2-9 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), the Zamora clay loam (0-2 percent slopes), and the San Ysidro loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and low to high corrosivity. All of these soils except for the San Ysidro loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline B.2a.** Pipeline B.2a will be installed within a variety of soils, including dominantly the Yolo loam (0-2 percent slopes) and small portions of the Pleasanton gravelly loam (2-9 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), the Zamora clay loam (0-2 percent slopes), and the San Ysidro loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and low to high corrosivity. All of these soils except for the San Ysidro loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system.

- **Pipeline C1.** Pipeline C.1 will be installed within a variety of soils, including the San Ysidro loam (0-2 percent slopes), the San Ysidro (acid variant), the Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), and small portions of the Los Osos clay loam (15-30 percent slopes), the San Andreas fine sandy loam (15-30 percent slopes, eroded), riverwash, the Garretson loam, gravel substratum (0-2 percent slopes), and the Yolo loam (2-5 percent slopes), which are all defined by the USDA NRCS (1974) to have low to high shrink-swell potential and low to high corrosivity. The Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), the Garretson loam, gravel substratum (0-2 percent slopes), and the Yolo loam (2-5 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland. Only the San Ysidro loam (0-2 percent slopes) and the San Ysidro (acid variant) are defined by the USDA NRCS (1995) as Farmland of Statewide Importance (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland and/or Farmland of Statewide Importance disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.
- **Pipeline C.2.** It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. Pipeline 4 will be installed within a variety of soils, including the San Ysidro loam (0-2 percent slopes), the Pleasanton loam (0-2 percent slopes), the Zamora clay loam (0-2 percent slopes), and the Yolo silty clay loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. The Pleasanton loam (0-2 percent slopes), the Zamora clay loam (0-2 percent slopes), and the Yolo silty clay loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland. Only the San Ysidro loam (0-2 percent slopes) is defined by the USDA NRCS (1995) as Farmland of Statewide Importance (**Table 2-10**). However, it is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP E – WREN AVENUE SPUR

Service of this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of a small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Pipeline 6 will be installed within a variety of soils, including the Yolo silty clay loam (0-2 percent slopes), the Campbell silty clay loam, the Campbell silty clay (muck substratum), the Zamora clay loam (0-2 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), the San Ysidro loam (0-2 percent slopes), and the Pleasanton loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. The Yolo silty clay loam (0-2 percent slopes), the Campbell silty clay loam, the Zamora clay loam (0-2 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), and the Pleasanton loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland. Only the San Ysidro loam (0-2 percent slopes) and the Campbell silty clay (muck substratum) are defined by the USDA NRCS (1995) as Farmland of Statewide Importance (**Table 2-10**). However, it is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, running west along Mantelli Drive and north along Calle del Rey. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions;

- **Pipeline H.1** would extend north along Wren Avenue. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

- **Pipeline H.2 and H.2.a** would extend south along Forest Street and east along Seventh Street. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

- **Pipeline H.3** would extend east along Pacheco Pass Highway. Pipeline H.3 will be installed within the Campbell silty clay loam, the Yolo loam (0-2 percent slopes), and the Pacheco clay loam (gravelly substratum), which are all defined by the USDA NRCS (1974) to have low to moderate shrink-swell potential and low to high corrosivity. All three soils are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control facilities along Llagas Creek and Miller Slough. Pipeline 9 will be installed within the Sunnyvale silty clay (drained), the Clear Lake clay (drained), the Zamora clay loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. All three soils are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low.***

CHAPTER 3

SUMMARY AND RECOMMENDATIONS

In order to examine the cumulative constraints associated with each site, a rating system (1 = low constraint, 2 = moderate constraint, 3 = high constraint) was applied to the constraint analysis presented in Chapter 2. **Table 3-1** below presents a summary of constraint levels and the cumulative rating of individual pipeline segments, with the highest point total representing the most highly constrained alignments. Individual issue areas were not weighted, as each issue areas could represent a fatal flaw to project implementation. However, it is recognized that various issue areas may be considered more vital to project implementation from the District's perspective. As demonstrated by **Table 3-1**, the pipeline routes are fairly similar in their cumulative potential for environmental constraint. Based upon analysis to date, the two issue areas with the greatest influence over pipeline routing are biological resources and cultural resources. For pipelines with high constraints identified, the Master Plan includes an alternative route that could be implemented to reduce impacts. Pipeline routes with the highest constraints include: Pipeline Route B.2a, which used the Monterey Frontage Road and Mesa Road to extend to Gavilan College; Pipeline Group D, which is located within central Gilroy; and Pipeline Group I, which includes pipeline routes along existing flood control channels.

Pipeline Route B.2a has substantial biological resource related to the Uvas Creek crossing, cultural resource issues, and traffic concerns related to the Mesa Road/U.S. Highway 101 off ramp. It should be noted that these impacts could be further assessed, and potentially reduced to an acceptable level, through application of design or mitigation measures within the context of CEQA and/or regulatory permitting. However, implementation of Pipeline Route B.2, which would use a future multi-purpose recreational trail, appears to present an implementable alternative that would reduce environmental impact and mitigation requirements.

Pipeline Group D has one of the highest ratings, due largely to its location within central Gilroy. This results in a moderate rating for every category, with the exception of biological resources. Implementation of standard construction measures have the ability to reduce potential impacts associated with this route to less than significant.

Pipeline Group I would include the use of flood control channel embankments for pipeline routing as an alternative to installation within roadways. Although this would reduce traffic impacts associated with roadway installation, use of flood control channels would have a greater potential for impacts to sensitive biological resources, and cultural resources, would likely require regulatory permits, and would conflict with District policy regarding longitudinal pipeline installation within flood control facilities.

TABLE 3-1
SUMMARY OF CONSTRAINTS

Location	Land Use/ Policy	Traffic	Biological Resources	Cultural Resources	Hydrologic Resources	Haz Mat	Cumulative Total
Group A	Low 1	Low 1	Low 1	Low 1	Low 1	Low 1	6
Group B							
B.1	Low 1	Low 1	Moderate 2	Low 1	Low 1	Low 1	7
B.2	Moderate 2	Low 1	Moderate 2	Moderate 2	Moderate 2	Low 1	10
B.2a	Low 1	Moderate 2	**High** **3**	**High** **3**	Moderate 2	Low 1	12
Group C							
C.1	Moderate 2	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	10
C.2	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
C.2a	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Low 1	8
Group D	Moderate 2	Moderate 2	Low 1	Moderate 2	Moderate 2	Moderate 2	11
Group E	Low 1	Moderate 2	Low 1	Low 1	Low 1	Low 1	7
Group F	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	High 3	10
Group G	Moderate 2	Moderate 2	Low 1	Low 1	Low 1	Low 1	8
Group H							
H.1	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
H.2	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
H.2a	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
H.3	Low 1	Moderate 2	Low 1	**High** **3**	Low 1	Moderate 2	10
Group I	Moderate 2	Low 1	**High** **3**	**High** **3**	Moderate 2	Low 1	12

CHAPTER 4
REFERENCES

California Department of Fish and Game, *Natural Diversity Data Base,* 2003

California Regional Water Control Board, Central Coast Region, *Water Quality Control Plan*, 1994

Caltrans, *2001 Traffic Volumes on California State Highways*, 2003, Annual Average Daily Traffic Volumes

Churchill, R. K., and Hill, R. L., 2000, A general location guide for ultramafic rocks in California – areas more likely to contain naturally occurring asbestos, CDMG Open-File Report 2000-019, scale 1:1,100,000, online at: http://ngmsvr.wr.usgs.gov/Prodesc/proddesc_44817.htm.

City of Gilroy Community Development Department, Engineering Division, 24-hour counts and extrapolated peak-hour counts.

City of Gilroy Planning Department, 2002, *City of Gilroy General Plan.*

Carollo Engineers, 2004, SCWRA Draft Recycled Water Master Plan.

Environmental Data Resources, Inc. (EDR), *The EDR Radius Map with GeoCheck®, SCVWD S. City Recycled Water Project, Gilroy, CA 95020*, December 18, 2003.

Environmental Science Associates, 2000, South County Regional Wastewater Authority Recycled Water Booster Pump Station and Reservoir *Draft* Mitigated Negative Declaration.

FEMA Flood Insurance Rate Map # 0603400003D

Historical Resources Information System, Northwest Information Center (December 2003). Database Search – Gilroy CA, Santa Clara County

Jennings, C.W., 1994, Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, California Division of Mines and Geology Geologic Data Map No. 6, 1:750,000 scale.

Santa Clara County Roads and Airport Department, 24-hour counts.

SCRWA, *Water Reclamation Planning Study,* 1995; and Department of Water Resources DWR Bulletin 104-7.

CEQA ENVIRONMENTAL **CHECKLIST FORM**

1. **Project Title:**
   Santa Clara Water District
   South County Regional Wastewater Authority
   Constraints Analysis

2. **Lead Agency Name and Address:**
   South County Regional Wastewater Authority
   9351 Rosanna Street
   Gilroy, California 95020

3. **Contact Person and Phone Number:**
   Jim Gasser, South County Regional Wastewater Authority
   (408) 848-0450

4. **Project Location:** In and near the City of Gilroy California, located in southern Santa Clara County on lands owned by the South County Regional Wastewater Authority and private parties. Agricultural lands, residential and commercial areas are within the site. Llagas Creek, Uvas Creek, and Miller Slough are in the project area.

5. **Project Sponsor's Name and Address:** See No.2, Lead Agency, above

6. **General Plan Designation:** Residential, Commercial, Public Lands, and Agriculture

7. **Zoning:** Mixed Use

8. **Description of Project:** Santa Clara Valley Water Department (the District) in partnership with the South County Regional Wastewater Authority (SCRWA), is considering an expansion of the existing tertiary treated recycled water pipeline. The proposed project would upgrade the existing distribution system to accommodate up to 6 million gallons per day (mgd). SCRWA is evaluating 48 potential tertiary treated recycled water users who will be served through installation of 95,500 feet of new pipeline connected to the existing recycled water pipeline serving the Gilroy area.

9. **Surrounding Land Uses and Setting**. The 2002 City of Gilroy General Plan denotes four categories of land use; residential, commercial, industrial, and other designations. The Land Use portion of the General Plan, defines the general pattern of future development for the City of Gilroy. The Land Use Plan Map covers the area within the "20-Year Boundary" of the General Plan. This is the area that the City expects to be serviced and developed in urban uses by the year 2020. The expansion pipeline does not interfere with any of the areas designated by the map.

10. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.): In order to construct and implement the pipeline project, the South County Regional Wastewater Authority would partner with the Santa Clara Valley Water District. The proposed project would submit a Programmatic EIR under CEQA. The proposed project would also require the following permits and approvals:

- U.S. Army Corps of Engineers – Section 404 Permit
- U.S. Fish and Wildlife Service and National Marine Fisheries Service – Consultation and coordination under the Endangered Species Act
- California Department of Fish and Game
- Santa Clara County Planning Department
- The City of Gilroy Planning Department

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒ Aesthetics
☒ Biological Resources
☒ Hazards & Hazardous Materials
☐ Mineral Resources
☒ Public Services
☒ Utilities / Service Systems
☒ Agriculture Resources
☒ Cultural Resources
☒ Hydrology / Water Quality
☒ Noise
☐ Recreation
☐ Mandatory Findings of Significance
☒ Air Quality
☒ Geology / Soils
☒ Land Use / Planning
☐ Population / Housing
☒ Transportation / Traffic

DETERMINATION: (To be completed by Lead Agency)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☒ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature ______________________ Date ______________________

Printed Name ______________________ For ______________________

Environmental Impacts:

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

The existing visual quality of the general area is dominated by urban uses associated with the City of Gilroy. Except for three potential bridge crossings, the pipeline will be buried in existing roadways or fields. Facilities will have short term disturbances and minor above ground appurtences, such as valve boxes and covers. No long term impacts are anticipated due to the below-grade nature of the pipeline routes. However, in the event storage tanks are identified as part of the project, those facilities would warrant further aesthetic analysis. The project does not propose installation of exterior lighting and would not affect scenic resources such as trees, rock outcroppings, or historical buildings. Although this issue would require analysis in any CEQA documentation, it is not considered a significant differentiator between the individual routes. Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as				

shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☒	☐	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Discussion

The proposed pipeline route is not under Williamson Act contract, and thus would not warrant a discussion of this issue. The proposed pipeline route crosses through prime agricultural lands. Final pipeline routes need to be assessed for potential loss of these lands. Therefore, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☒	☐	☐

Discussion

Construction activities would significantly affect the pollutant levels for sensitive receptors. Depending on the length of time the project takes to complete will determine the overall affect on the areas of concern. Therefore, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community				

Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Discussion

The proposed pipeline routes are located within roadways and agriculture fields that have been previously disturbed. Habitats along these routes are generally limited. Riparian corridors along Uvas and Llagas Creeks do provide sensitive species habitat. It is anticipated that potentially significant impacts to sensitive species or habitat would result from the proposed pipeline routes. Project specifications will ensure that impacts to sensitive species or habitat are avoided or reduced wherever possible. However, due to the potential for impacts to sensitive species, this issue should be examined in an Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Discussion

Native American archaeological sites in this portion of South Santa Clara County tend to be situated at the base of hills near sources of water. An archival record search for preliminary site locations was performed by Historical Resources Information Center, Northwest Information Center at Sonoma State University. Final pipeline routes shall be confirmed with respect to previous surveys, and standard provisions to protect cultural resources should be included in any construction bid documents. Three pipeline alignments were found to have “high” sensitivity for cultural resources. However, due to the potential for impacts to cultural resources, this issue should be examined in an Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

The proposed project area is located approximately seven miles northeast of the San Andreas fault, three miles northeast of the Sargent fault, and four miles southwest of the Calaveras fault. The San Andreas and Calaveras faults are classified as active, and the Sargent fault is considered potentially active (Jennings, 1994). Because of the earthquake history of the San Francisco and Monterey Bay regions and earthquake recurrence intervals, it is probable that the project area would experience strong ground shaking during the design life of the proposed pipeline alignment. However, it is likely that seismically-induced ground shaking would create an insignificant risk of damage if design features of the pipeline are in compliance with seismic requirements of the current Uniform Building Code (UBC). The proposed project does not lie within the designated Alquist-Priolo “Earthquake Fault Zone” for fault rupture hazard, therefore, the potential for surface rupture is low.

Earthquakes or aftershocks may cause secondary ground failures. Ground failures are caused by soil losing its structural integrity. Examples of seismically-induced ground failures are liquefaction, later spreading, ground lurching, and subsidence. Liquefaction (the rapid transformation of soil to a fluid-like state) affects loose saturated sands. Earthquake ground shaking induces a rapid rise in excess pore pressure and the soil loses its bearing strength. Under these conditions, soils may spread laterally, undergo settlement and form fissures and sand boils (upwelling of sand at the surface). Lateral spreading is the horizontal movement of loose, unconfirmed sedimentary, and fill deposits during seismic activity. Ground-lurching is the horizontal movement of soil, sediments, or fill located on relatively steep embankments or scarps as a result of seismic activity, forming irregular ground surface cracks. The potential for lateral spreading or lurching is highest in areas underlain by soft, saturated materials, especially where bordered by steep banks or adjacent hard ground. Subsidence is vertical downward movement of the ground surface. Impacts associated with seismic-related ground failure at the proposed sites are considered low. However, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to				

Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion

The proposed pipeline routes would be within residential, commercial, agricultural fields, and along major roadways including; Highway 101 and Highway 152. An environmental site assessment was done through a computer database search to; identify known or suspected sites where contamination of soils or groundwater may exist; sites permitted to handle hazardous wastes under Resource Conservation and Recovery Act (RCRA); and sites with permitted underground storage tanks. Several sites along the proposed pipeline route were identified in this search. Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☒	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

The proposed project would not alter the drainage course of a stream or river such that substantial erosion or sedimentation would occur. The proposed project would not alter the drainage pattern of a stream or river, or contribute surface flows that would exceed capacity of drainage systems. Project implementation does not include development of housing. Therefore, no impacts associated with placement of housing within the 100-year floodplain would occur.

The proposed project will not utilize or deplete groundwater. However, the project would potentially result in some groundwater infiltration at the proposed user sites, and is consistent with SCRWA's existing percolation operations at their Waste Water Treatment Plant (WWTP). Due to the sensitivity of recycled water use by the general public, and the potential impacts to water quality, this issue area needs to be further studied within a Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
IX. LAND USE AND PLANNING -- Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☒	☐	☐	☐

Discussion

The proposed project would construct a recycled water pipeline through and near the City of Gilroy in Santa Clara County in developed and undeveloped areas. Therefore, the project would result in a disruption, physical division, or isolation of existing residential areas, and impacts would occur. These potential impacts will be further addressed in an Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

The California Division of Mines and Geology (CDMG) has classified lands within the San Francisco-Monterey Bay region into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1975 (Stinson et al., 1983). The CDMG classified urbanizing lands within the South San Francisco Bay Production-Consumption Region according to the presence or absence of significant sand, gravel, or stone deposits that are suitable as sources of aggregate. Areas classified as MRZ-1 are areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little or no likelihood exists for their presence. MRZ-2 areas are those where adequate information indicates that significant deposits are present. Areas classified as MRZ-3 contain mineral deposits, but their significance cannot be evaluated from available data. Areas are classified as MRZ-4 where available information is inadequate for assignment to any other MRZ category. The majority of the City of Gilroy and surrounding areas, including the wetland site is unclassified, or information is inadequate for classification. Therefore, there are no known mineral resources located in the project vicinity and no impact would result from project construction or operation. However, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XI. NOISE -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

Significant traffic operational noise would be expected along the majority of the proposed pipeline route due to Highway 101 and Highway 152 which run through Gilroy. Secondary noise impacts would not be significant.

Project construction would result in intermittent, elevated noise levels within the project vicinity. Construction noise would result from operation of equipment and vehicles, including heavy trucks and earth-moving equipment. The effect of construction noise would depend upon how much noise is generated by construction, the distance between construction activities and the nearest noise-sensitive uses, and the existing noise levels at those uses. Potential impacts associated with construction noise will be examined in the upcoming Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

The proposed project would not displace existing housing; therefore, this project would not necessitate the construction of replacement housing elsewhere. However, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XIII. PUBLIC SERVICES --				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Discussion

Significant temporary impacts can be anticipated with potential interruption of water supply due to construction. This cumulative impact associated with increase pubic services has been previously considered in the 1990 EIR analysis. Potential secondary effects of growth will be reviewed with respect to any changes in the General Plans that have occurred since the 1990 EIR. This potential would be addressed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XIV. RECREATION --				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Discussion

The City of Gilroy's 2002 Master Plan describes new recreational facilities that are within the proposed pipeline route. Therefore, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact could be considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XV. TRANSPORTATION / TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☒	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐

e) Result in inadequate emergency access?	☒	☐	☐	☐
f) Result in inadequate parking capacity?	☒	☐	☐	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☒	☐	☐	☐

Discussion

Construction impacts are evaluated for the various pipeline alignments. Operational impacts would be insignificant. Secondary construction-related traffic impacts would occur and were evaluated for major roadways. In general, pipeline installation generates four types of traffic impacts; disruption of traffic flow due to roadway construction and traffic control; generation of vehicle trips due to construction worker and materials delivery; loss of parking due to contractor staging or worker parking; and disruption of access, including emergency, residential, and commercial access. These effects are limited to the duration of the construction activity, and are typically short-term in any one location due to the linear nature of pipeline construction. Typically, construction activities generate traffic volumes of 50 to 100 Average Daily Trips (ADT). The recycled water expansion pipeline will be installed along roadways within the City of Gilroy. .Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XVI. UTILITIES AND SERVICE SYSTEMS -- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☒	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

The proposed project is limited to construction within existing streets and agriculture fields. Relevant sections of the CWA to the Project include:

- CWA Section 303 / 401 Requirements for projects to meet water quality standards of the adjacent water body, along with certification that such standards are being met.
- CWA Section 402 (NPDES) permit for discharge into creek (or wetland if it is considered a water of the U.S.). Discharge requirements are determined by the RWQCB.
- CWA Section 402 (NPDES) permit for storm water discharge during construction. The contractor will be required to prepare a Storm Water Pollution Prevention Plan.

Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Impacts Requiring No Further Analysis

- The project site is not located near an existing or proposed school, nor is it located in the vicinity of an airport. Therefore, this project would not result in safety hazards for people in the project area.

- The project site is not listed in the Hazardous Waste and Substances Sites List (EPA, 1994). Therefore, development of the project would not create a significant hazard to the public or the environment.

- The project sites are not part of any staging area of any adopted emergency response plans or emergency evacuation plans. Therefore, no impacts would occur.

- The project would not expose people or structures to wildfires. Therefore, no impacts would occur.

- There are several dams and reservoirs in the region, including Anderson Dam, Coyote Dam, and Uvas Reservoir. If these structures failed, water levels in Llagas Creek may rise and impact the project site. Earthquakes can cause tsunamis ("tidal waves"), seiches (oscillating waves in enclosed water bodies), and landslide splash waves in enclosed water bodies such as lakes, reservoirs, and the San Francisco Bay. Earthquakes can also result in dam failures at reservoirsHowever, the likelihood of such an occurrence would not be affected by the proposed project and is considered remote. Therefore, this impact would be considered less-than-significant.

- The proposed project would not require water entitlements; therefore, no impacts would occur.
- Solid waste generation would be limited to construction activities, and would not affect available solid waste disposal capacity in the region. No long-term solid waste generation would be associated with the proposed project, other than green waste associated with periodic maintenance of vegetation.
- The contractor would be required to comply with all pertinent regulations regarding the disposal of solid waste generated by construction activities.

TO:	Santa Clara Valley Water District/ South County Regional Water Authority	**FROM:**	Environmental Science Associates
SUBJECT:	Rationale for Preparation of a Programmatic EIR (CEQA) for the South County Recycled Water Expansion Plan	**DATE:**	April 4, 2004

A. RECOMMENDATION

This memorandum provides a basis for our recommendation that the Santa Clara Valley Water District-South County Regional Wastewater Authority South County Recycled Water Master Plan qualifies for a ***Programmatic EIR in compliance with Section 15168 of the California Environmental Quality Act (CEQA) Guidelines.***

This recommendation was developed after site reviews conducted by Carollo Engineering and Environmental Science Associates (ESA), and discussions with District staff.

To support the recommendation, this memo describes the project and sets forth an analysis of potential environmental impacts associated with the project. A project area site map is attached.

B. PROJECT DESCRIPTION / BACKGROUND

The proposed project has been identified by SCRWA and the District as a means of increasing the flexibility and reliability of the existing reclaimed water distribution system in the Gilroy area. Increasing the availability of recycled water would enable SCRWA to continue pursuing new recycled water customers. The proposed project would upgrade the existing distribution system to accommodate up to 6 million gallons per day (mgd). This would equal the future expanded tertiary treatment system capacity of the SCRWA WWTP. Depending on the local market for recycled water in south Santa Clara County, future projects could increase recycled water deliveries from the SCRWA WWTP from current levels of less than 3 mgd to as much as 15 mgd.

SCRWA has provided limited recycled water service since installation of a recycled water distribution system in 1978. This system, constructed as a joint project with the District in 1978, was designed to provide service to primarily agricultural interests on the west side of Uvas Creek. The distribution system capacity is approximately 3 mgd. Currently, the recycled water distribution system operates on an as-needed basis, supplying approximately 1.2 mgd of tertiary treated recycled water (maximum month demand) to the Eagle Ridge Golf Course, 0.11 mgd to the Christmas Hill Park, 0.13 mgd to the Obata farm in the vicinity of the SCRWA WWTP, and 0.10 mgd to Calpine-Gilroy Energy Center.

The Carollo Master Plan 2002, identified current and future users; anticipated water demands; and a phased in distribution system to meet these demands. Pipeline facilities identified, and reviewed with respect to potential for environmental impact, are identified below.

Group A – DIRECT CONNECTIONS

This would include service to those customers that are located close to the existing SCRWA recycled water distribution facilities and pipelines.

Group B – GAVILAN COLLEGE AREA

Service to this customer would use a combination of existing and new pipeline to extend from the SCRWA WWTP to the college facility west of U.S. Highway 101.

The following segment alignments would be used:

- **Pipeline B.1** would be installed from the SCRWA WWTP to the existing pipeline at Monterey Street. This would include installation west along Southside Drive, north along Rossi Avenue, and west along East Luchessa to the existing pipeline, which crosses under Highway 101.
- **Pipeline B.2.** This route would extend west from the existing pipeline and across agricultural fields along the proposed multi-use recreational trail identified in the 2002 Gilroy Trails Conceptual Master Plan, as part of the 2002 City of Gilroy Master Plan**.** Under the proposed Master Plan, a bridge would be installed over Uvas Creek, presenting an opportunity for pipeline attachment to cross the creek. Pipeline would then be installed within the trail to Santa Teresa Blvd., with tie-in to campus facilities.
- **Pipeline B.2a.** This alternate route would be installed south along Monterey Frontage Road, west across Uvas Creek and agricultural fields, west along Mesa Road, and south along Santa Teresa Blvd. to Gavilan College.

Group C – FIRST STREET LOOP

Service to this group would include new pipeline routes in existing streets.

- **Pipeline C.1.** This pipeline would extend from Wren Street west along First Street to meet the existing pipeline west of Conrotto Winery.
- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system.
- **Pipeline C.2.a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street and serve Glenview Elementary and Gateway School.

Group D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park.

Group E – WREN AVENUE SPUR

Service to this group would include extension of new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue.

Group F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101, at the location of the new highway crossing for service to Gavilan College, or at the highway crossing for any new pipelines.

Group G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, and would run west along Mantelli Drive and north along Calle del Rey.

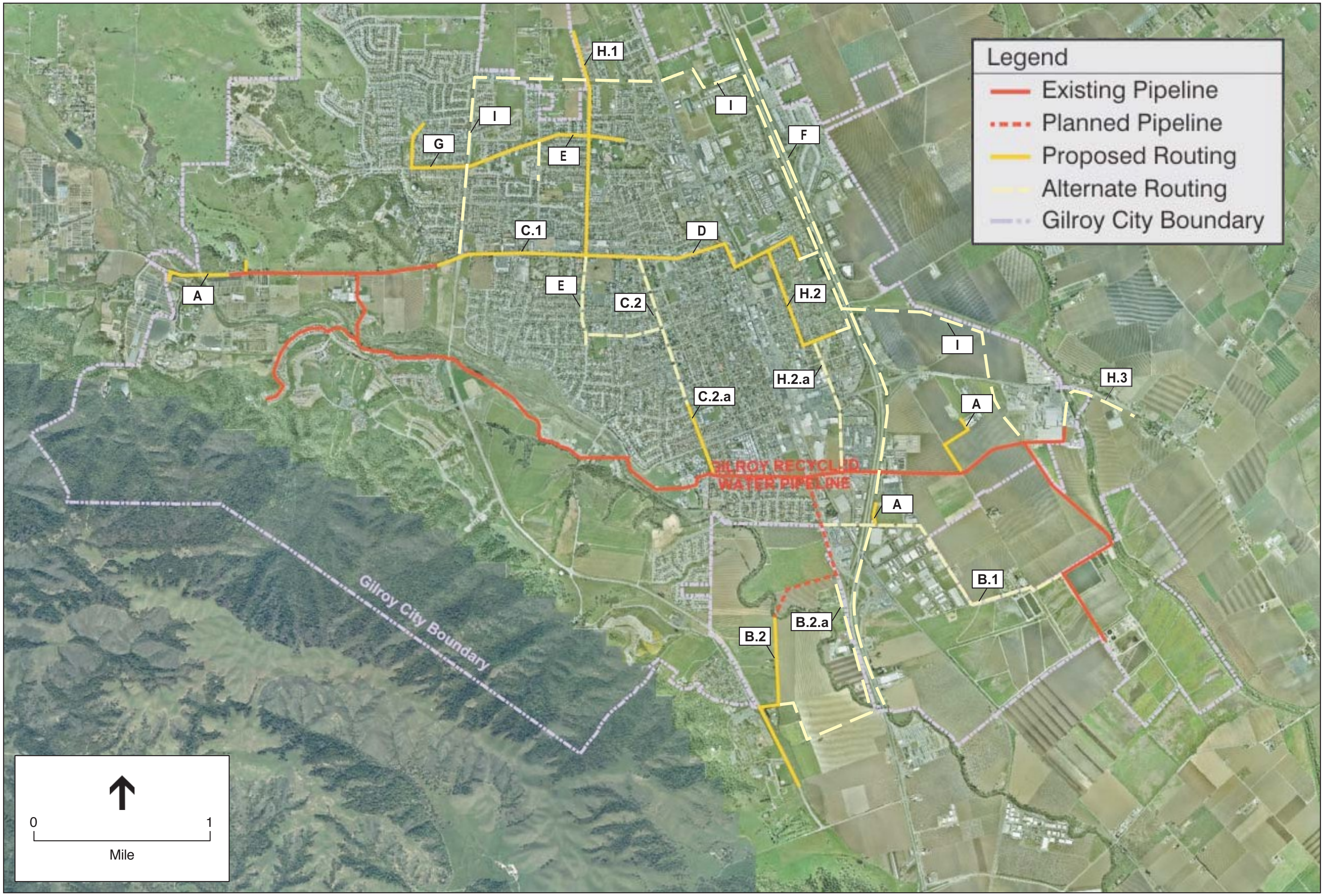
Group H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue.
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School.
- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used.
- **Pipeline H.3** would extend east along Pacheco Pass Highway to San Ysidro Elementary School.

Group I – FLOOD CONTROL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control easements along Llagas Creek and Miller Slough. These facilities provide gravel access roads at top of embankment, and proposed pipelines would be installed within existing District right of ways. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation within levees. This type of alignment would need to be reviewed and approved by the District. This route would extend north from the SCRWA WWTP along Miller Slough, then west across Highway 101 along the existing flood control channel. On the west side of Highway 101, the pipeline would extend north and west along the channel to link up with proposed pipeline along north Santa Teresa Blvd. This pipeline group, suggested by the City of Gilroy Planning Department, would reduce pipeline installation within City of Gilroy roadways.



SOURCE: Environmental Science Associates

SCVWD / 203019 ■

Figure 1

Pipeline Alignment

C. ENVIRONMENTAL SETTING

As shown on Figure 1, the South County Recycled Water Expansion Plan is located in Santa Clara County, in the City of Gilroy; encompassing an area divided by U.S. I-101. The project area would extend from the south-eastern edge of the City; to a western point at Bonfante Farms; and a northern point near Wren and Franklin Streets.

The character of the area is of mixed use including; agricultural lands, residential, commercial, and public lands. The project area is limited primarily to existing streets and undeveloped agricultural lands. The proposed pipeline route crosses Ulvas and Llagas creeks and Miller Slough.

D. POTENTIAL IMPACTS

According to CEQA Guidelines Section 15168, a Program EIR is an EIR, which may be prepared on a series of actions that can be characterized as one large project and are, related either:

- Geographically
- Logical parts in the chain of complicated actions
- In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways

The District's proposed Program EIR meets the above characterizations. In addition, there are several advantages to preparing a Program EIR:

- An exhaustive consideration of effects and alternatives
- Consideration of cumulative impacts
- Consideration of program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts.

The project has been preliminarily assessed by ESA, through pertinent background documentation, computer database searches, and field reconnaissance consisting of windshield and ground surveys using available access. Site surveys were conducted on December 4, 2003 and December 29, 2003. A preliminary assessment has determined that potentially significant impacts would result from project construction operations. The issue areas with the potentially for significant impacts are summarized below:

Land Use and Land use Policy. The District, as a regional agency and utility district, is not subject to land use and zoning designations of local jurisdictions for projects involving public utility uses. The City of Gilroy General Plan (2002) denotes four categories of land use; residential, commercial, industrial, and other designations. The Land Use Plan Map portion of the General Plan covers the area within the "20-Year Boundary" which is expected to be serviced and developed in urban uses by the year 2020. The expansion pipeline does not interfere with any of the areas designated by the map. However, due to the length of time for project completion and the potential changes made to the pipeline route, land uses would be best addressed within a Programmatic EIR.

Traffic/Transportation: Project construction activities and operations would occur within residential and commercial areas, and within the Highway 101 corridor. Traffic impacts would be considered significant. These effects are limited to the duration of the construction activity, and are typically short-term in any one location due to the linear nature of pipeline construction. Using Best Management Practices (BMPs) to reduce traffic impacts would be required to help lessen any traffic impacts. Due to the traffic volumes of major arteries effect by this project, specific impacts would be best analyzed under a Programmatic EIR.

Biological Resources It is anticipated that potentially significant impacts to sensitive species or habitat would result from the proposed pipeline routes. Mitigation measures including avoidance and preventive practices will be utilized. Best Management Practices (BMPs) proposed as part of the project include Stormwater Pollution Prevention Plan (if the total area of disturbance is greater than one acre) or a Construction Erosion Control Plan. The recommended BMPs included in the project specifications will ensure that impacts to sensitive species or habitat are avoided or reduced wherever possible. Due to the potential impacts to sensitive habitat areas, it is recommended that this issue be analyzed in a Programmatic EIR.

Depending on the final pipeline route chosen, there may be jurisdictional waters requiring coordination with federal and State agencies. Uvas and Llagas watersheds and their tributaries discharge into Guadalupe River and eventually into San Francisco Bay. The tributaries and the creeks are thereby waters of the U.S. by definition, because they are continuous with the downstream waters. It is likely that the project could proceed under a Nationwide Permit from the U.S. Army Corps of Engineers.

Visual Resources: The existing visual quality of the project area is dominated by urban uses associated with the City of Gilroy. Except for potential bridge crossings, the pipeline will be buried within existing roadways or fields. Views from the pipeline route would be limited to the short-term effects during construction. The length of time this project will need for implementation may significantly affect this area of concern for residential and commercial customers. This impact should be analuzed in a Programmatic EIR.

Cultural Resources: An archival records search for preliminary site locations was performed by Historical Resources Information System, Northwest Information Center at Sonoma State University. Developed and built areas are typically not impacted by construction or operation of pipelines. As such, only the undisturbed areas along creeks or in fields were surveyed. Three pipeline alignments were found to have “high” sensitivity for cultural resources. These impacts would be less than significant with BMPs in place to protect any cultural resources. The areas of concern should be further analyzed in a Programmatic EIR.

Water/Hydrology Resources: Recycled water produced at the SCRWA WWTP meets all Title 22 water quality requirements for disinfected tertiary treated water. The long-term use of recycled water poses potential impacts to surface water and ground water quality. With proper landscape practices, and adhering to ground water quality objectives as established by the Regional Water Quality Control Board, any adverse effects on surface and ground water would be mitigated. However, due to the sensitivity of recycled water use by the general public, and the potential impacts to water quality, this issue area needs to be analyzed in a Programmatic EIR.

Construction operations could potentially induce erosion and sedimentation which could violate water quality standards. Potential water quality impacts could be reduced to a less than significant level with the adoption of a Stormwater Pollution Prevention Plan or a Construction Erosion Control Plan as BMPs.

Hazards and Hazardous Materials: A spill during construction operations could potentially result in the release of a hazardous substance. The inclusion of appropriate BMPs in the project could reduce the risk of spill or upset to a less than significant level for construction. There are several areas in the project area that are known hazardous materials sites and any removed soils may require profiling for disposal. The potential for contamination is potentially significant and should be analyzed in a Programmatic EIR.

Geology and Soils: The project area would not introduce elements that would expose persons or property to potential seismic or other geological risks. Soil disturbances from construction operations could potentially expose some areas to erosion. Potential erosion risks could be avoided through the application of appropriate BMPs, including the application of soil protection measures during construction. The project would require some level of disturbance to lands that are identified as Prime Farmland soils or Farmland of Statewide Importance soils (USDA NRCS, 1995). Conversion of either of these soil types is considered a potentially significant impact under Appendix G of the California Environmental Quality Act (CEQA). This area of concern would need to be analyzed in a Programmatic EIR.

F. PROPOSED CEQA DOCUMENT AND RATIONALE

Based upon our review of the project to date, and in consultation with District staff, preliminary analysis has determined the potential environmental impacts of the proposed phased-in project, are considered potentially significant under CEQA. As such, preparation of an EIR appears to be appropriate. Because of the phased and regional nature of this project, use of a Program or Master EIR, as provided in Section 15168 and 15175 respectively, appears to be the most appropriate CEQA approach.

If you approve the use of a Programmatic EIR for this project, please sign below and the appropriate attached documents.

____

Approval:

____

____
Chief Executive Officer

cc:

APPENDIX D - COST ESTIMATES FOR THE PROPOSED CIP

Table 4.5 Estimated Project Costs for the Capital Improvement Program
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**		
Description	**Immediate-Term**	**Short-Term(1)**	**Long-Term(1)**
Customer Connections	$4,000	$25,000	$22,000
Customer Retrofits	$0	$105,000	$225,000
Distribution System	$754,000	$6,858,000	$2,885,700
Subtotal (Excluding Pumping and Storage Costs)	$758,000	$6,988,000	$3,133,000
Estimating Contingency (20%)	$152,000	$1,398,000	$627,000
Construction Contingency (20%)	$182,000	$1,677,000	$752,000
Onsite WWTP Pumping and Storage	$2,510,000	$3,310,000	-
Total Construction Cost at Basis of Study	$3,600,000	$13,400,000	$4,500,000
Admin, Legal, Planning, Design, and Construction Management (30%)	$1,100,000	$4,000,000	$1,350,000
Total Project Cost for Each Phase	**$4,700,000**	**$17,400,000**	**$5,900,000**
Project Cost for the Entire Proposed CIP	**$28,000,000**		

Notes:

(1) Capital cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.

(2) Project costs do not include cost of California Environmental Quality Act compliance.

(3) Subtotal of capital costs does not include pumping and storage costs, as these cost estimates already include contingencies and are based on MWH's 50% design cost estimates for the SCRWA tertiary treatment expansion.

(4) Pipeline costs based on unit costs from Harris and Associates' estimates for water pipeline construction in the City of Gilroy.

Table 4.6 Estimated Operation and Maintenance Costs(1)
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**			
Description	**Existing**	**Immediate-Term**	**Short-Term(2)**	**Long-Term(2)**
Purchased Power	$6,000	$13,000	$41,000	$52,000
Distribution System Maintenance	$21,000	$23,000	$45,000	$54,000
General Administration	$11,000	$12,000	$24,000	$29,000
Subtotal	$38,000	$48,000	$110,000	$135,000
Estimating Contingency (20%)	$8,000	$10,000	$22,000	$27,000
Total O&M Cost(2)	$46,000	$58,000	$132,000	$162,000
Incremental O&M Cost	**-**	**$12,000**	**$74,000**	**$30,000**

Notes:

(1) Operations and maintenance (O&M) costs include costs for distribution only, not treatment. O&M cost estimates include costs for upkeep of the existing distribution system and distribution costs for existing customers.

(2) O&M cost estimates inclusive of previous phase costs, i.e. long-term plan costs include the existing system, short-term, and immediate-term costs.

Table 4.7 Annual Cost Summary
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**			
Description	**Existing**	**Immediate-Term**	**Short-Term(1)**	**Long-Term(1)**
Incremental Project Costs (Present Worth)	-	$4,700,000	$17,400,000	$5,900,000
Convert to Annual Basis	5.5% interest over 50 years = 0.0591			
Annual Project Costs	-	$278,000	$1,028,000	$349,000
Incremental O&M Costs	$46,000	$12,000	$74,000	$30,000
Incremental Annual Cost	$46,000	$290,000	$1,102,000	$379,000
Total Annual Flow (AFY)	711	1,566	2,500	3,148
Incremental Flow (AFY)	-	855	934	648
Cost per additional Acre-foot, Annually	**-**	$340	$1,180	$580
Cost per Annual Acre-foot, Entire Proposed CIP	**$580**			

Notes:

(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.

(2) For the purposes of this cost estimate, inflation and discount rate for annualized costs are assumed equal, offsetting cost impacts over the phased construction schedule.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Existing System - Operations and Maintenance Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107
October 20, 2004

Operation and Maintenance Costs

ITEM NO.	DESCRIPTION	QUANTITY 1st Full Year	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	42,000	KWH	$0.14	$6,000
2	Maintenance of Distribution System	7	MILES	$2,800	$21,000
3	General Administration	7	MILES	$1,500	$11,000
	Subtotal				$38,000
	Estimating Contingency			20%	$8,000
	Total				**$46,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$0
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$0
O&M Costs	$46,000
Total Annual Costs	$46,000
Average Flow (MGD)	0.64
Average Flow (CFS)	1.0
Total Annual Flow (cubic feet)	31,040,781
Total Annual Flow (afy)	711
Dollars per Acre Foot - Annual Basis	**$60**
Dollars per Million Gallons - Annual Basis	**$180**

Power Costs

Average Flow (MGD)	0.64
Average Flow (GPM)	441
TDH (psi)	43
TDH (Feet)	100
Pump Efficiency	0.65
HorsePower	17
Kilowatts	13
Kilowatt hours	42,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Immediate-Term Capital Improvement Program - Project Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$4,000**
1	Service Connections	1	EA	$1,600	$1,600
2	Backflow Preventors	1	EA	$2,000	$2,000
	Customer Retrofits				**$0**
3	Agricultural Use (Obata Farms Near Plant)	1	EA	$0	$0
	Distribution System				**$754,000**
	Pipe Diameter (in)				
4	4	0	LF	$81	$0
5	6	0	LF	$81	$0
6	12	3,000	LF	$108	$324,000
7	16	0	LF	$130	$0
8	30	0	LF	$191	$0
9	Hecker Pass Pipeline Retrofit	-	-	$430,000	$430,000
	Total Pipeline Length	3,000	LF		
	Subtotal (Excluding Pumping and Storage Costs)				**$758,000**
	Estimating Contingency			20%	$152,000
	Construction Contingency			20%	$182,000
	Pump Station Capacity	1	3-MGD	$800,000	$800,000
	Reservoir Storage	1	3-MG	$1,710,000	$1,710,000
10	**Onsite WWTP Pumping and Storage (Construction Cost)**				**$2,510,000**
	Total Construction Cost at Basis of Study				**$3,600,000**
	Administration, Legal, Planning, Design, and Construction Management			30%	$1,100,000
	Total Project Cost, Immediate-Term CIP				**$4,700,000**

Notes:

4-8) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.
9) Hecker Pass Pipeline retrofit costs based on SCVWD costs for previous retrofit of main pipeline.
10) Costs for pumping and storage based on MWH's 50% Design Construction Cost Estimates from the SCRWA Filter Plant Expansion.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Immediate-Term Capital Improvement Program - Operations and Maintenance Costs
Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	92,000	KWH	$0.14	$13,000
2	Maintenance of Distribution System	8	MILES	$2,800	$23,000
3	General Administration	8	MILES	$1,500	$12,000
	Subtotal				$48,000
	Estimating Contingency			20%	$10,000
	Total				**$58,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile;
a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$4,700,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$278,000
O&M Costs	$58,000
Total Annual Costs	$336,000
Average Flow (MGD)	1.40
Average Flow (CFS)	2.2
Total Annual Flow (cubic feet)	68,368,303
Total Annual Flow (afy)	1,566
Dollars per Acre Foot - Annual Basis	**$210**
Dollars per Million Gallons - Annual Basis	**$650**

Power Costs

Average Flow (MGD)	1.40
Average Flow (GPM)	971
TDH (psi)	43
TDH (Feet)	100
Pump Efficiency	0.65
HorsePower	38
Kilowatts	28
Kilowatt hours	92,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Short-Term Capital Improvement Program - Project Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$25,000**
1	Service Connections	7	EA	$1,600	$11,200
2	Backflow Preventors	7	EA	$2,000	$14,000
3	No Connection Needed (Middle School)	1	EA	$0	$0
	Customer Retrofits				**$105,000**
4	Gilroy High School	1	EA	$25,000	$25,000
5	Gilroy Golf Course	1	EA	$5,000	$5,000
6	Other Retrofits (Industries)	3	EA	$25,000	$75,000
7	Constructed with Project - No Retrofit	3	EA	$0	$0
	Distribution System				**$6,858,000**
	Pipe Diameter (in)				
8	4	2,100	LF	$81	$170,100
9	6	500	LF	$81	$40,500
10	12	0	LF	$108	$0
11	16	16,390	LF	$130	$2,130,700
12	30	23,650	LF	$191	$4,517,150
	Total Pipeline Length	42,640	LF		
	Subtotal (Excluding Pumping and Storage Costs)				$6,988,000
	Estimating Contingency			20%	$1,398,000
	Construction Contingency			20%	$1,677,000
	Pump Station Capacity	2	3-MGD	$800,000	$1,600,000
	Reservoir Storage	1	3-MG	$1,710,000	$1,710,000
13	**Onsite WWTP Pumping and Storage (Construction Cost)**				**$3,310,000**
	Total Construction Cost at Basis of Study				$13,400,000
	Administration, Legal, Planning, Design, and Construction Management			30%	$4,000,000
	Total Project Cost, Short-Term CIP				**$17,400,000**

Notes:
8-12) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.
13) Costs for pumping and storage based on MWH's 50% Design Construction Cost Estimates from the SCRWA Filter Plant Expansion.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Short-Term Capital Improvement Program - Operations and Maintenance Costs
Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	295,000	KWH	$0.14	$41,000
2	Maintenance of Distribution System	16	MILES	$2,800	$45,000
3	General Administration	16	MILES	$1,500	$24,000
	Subtotal				$110,000
	Estimating Contingency			20%	$22,000
	Total				**$132,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile;
a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$17,400,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$1,028,000
O&M Costs	$132,000
Total Annual Costs	$1,160,000
Average Flow (MGD)	2.23
Average Flow (CFS)	3.5
Total Annual Flow (cubic feet)	109,144,800
Total Annual Flow (afy)	2,500
Dollars per Acre Foot - Annual Basis	**$460**
Dollars per Million Gallons - Annual Basis	**$1,420**

Power Costs

Average Flow (MGD)	2.2
Average Flow (GPM)	1,551
TDH (psi)	87
TDH (Feet)	200
Pump Efficiency	0.65
HorsePower	120
Kilowatts	90
Kilowatt hours	295,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Long-Term Capital Improvement Program - Project Costs
Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107
October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$22,000**
1	Service Connections	6	EA	$1,600	$9,600
2	Backflow Preventors	6	EA	$2,000	$12,000
	Customer Retrofits				**$225,000**
3	Gavilan Sports Park	1	EA	$25,000	$25,000
4	Gavilan Golf Course	1	EA	$25,000	$25,000
5	Gavilan College	1	EA	$75,000	$75,000
6	Other Retrofits (Bonfante, Goldsmith)	2	EA	$50,000	$100,000
7	Constructed with Project - No Retrofit	1	EA	$0	$0
	Distribution System				**$2,885,700**
8	Booster Pump Station	1	2-MGD	$800,000	$800,000
	Pipe Diameter (in)				
9	4	500	LF	$81	$40,500
10	6	0	LF	$81	$0
11	12	3,000	LF	$108	$324,000
12	16	13,240	LF	$130	$1,721,200
13	30	0	LF	$191	$0
	Total Pipeline Length	16,740	LF		
	Subtotal				$3,133,000
	Estimating Contingency			20%	$627,000
	Construction Contingency			20%	$752,000
	Total Construction Cost at Basis of Study				$4,500,000
	Administration, Legal, Planning, Design, and Construction Management			30%	$1,350,000
	Total Project Cost, Long-Term CIP				**$5,900,000**

Notes:
9-13) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Long-Term Capital Improvement Program - Operations and Maintenance Costs
Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	372,000	KWH	$0.14	$52,000
2	Maintenance of Distribution System	19	MILES	$2,800	$54,000
3	General Administration	19	MILES	$1,500	$29,000
	Subtotal				$135,000
	Estimating Contingency			20%	$27,000
	Total				**$162,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile;
a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$5,900,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$349,000
O&M Costs	$162,000
Total Annual Costs	$511,000
Average Flow (MGD)	2.81
Average Flow (CFS)	4.4
Total Annual Flow (cubic feet)	137,435,132
Total Annual Flow (afy)	3,148
Dollars per Acre Foot - Annual Basis	**$160**
Dollars per Million Gallons - Annual Basis	**$490**

Power Costs

Average Flow (MGD)	2.8
Average Flow (GPM)	1,953
TDH (psi)	87
TDH (Feet)	200
Pump Efficiency	0.65
HorsePower	152
Kilowatts	113
Kilowatt hours	372,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Project: **Morgan Hill Transmission Line** - Project Cost
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$75,600**
1	Service Connections	21	EA	$1,600	$33,600
2	Backflow Preventors	21	EA	$2,000	$42,000
	Customer Retrofits				**$210,000**
3	Twenty-One Sites	21	EA	$10,000	$210,000
	Distribution System				**$13,660,000**
	Pipe Diameter (in)				
4	12	15,000	LF	$108	$1,620,000
5	24	70,000	LF	$172	$12,040,000
	Total Pipeline Length	85,000	LF		
	Pumping and Storage				**$2,500,000**
6	Booster Pump Station	1	2-MGD	$1,000,000	$1,000,000
7	Reservoir Storage	2,000,000	Gallons	$0.75	$1,500,000
			Subtotal		$16,450,000
			Estimating Contingency	20%	$3,290,000
			Construction Contingency	20%	$3,948,000
			Total Construction Cost at Basis of Study		$23,690,000
			Administration, Legal, Planning, Design, and Construction Management	30%	$7,110,000
			Total Project Cost		**$30,800,000**

Notes:
4-5) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Project: **Morgan Hill Transmission Line** - Operations and Maintenance Cost
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	159,000	KWH	$0.14	$22,000
2	Maintenance of Distribution System	16	MILES	$2,800	$45,000
3	General Administration	16	MILES	$1,500	$24,000
	Subtotal				$91,000
	Estimating Contingency			20%	$18,000
	Total				**$109,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$30,800,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$1,820,000
O&M Costs	$109,000
Total Annual Costs	$1,929,000
Average Flow (MGD)	0.69
Average Flow (CFS)	1.1
Total Annual Flow (cubic feet)	33,572,940
Total Annual Flow (afy)	769
Dollars per Acre Foot - Annual Basis	**$2,500**
Dollars per Million Gallons - Annual Basis	**$8,000**

Power Costs

Average Flow (MGD)	0.69
Average Flow (GPM)	477
TDH (psi)	152
TDH (Feet)	350
Pump Efficiency	0.65
HorsePower	65
Kilowatts	48
Kilowatt hours	159,000

Estimated Recycled Water Program Costs and Revenue
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

	Capital Costs										
Year	**Immediate-Term** ($/year)	**Short-Term** ($/year)	**Long-Term** ($/year)	**O&M Costs** ($/year)	**Total Costs** ($/year)	**Ag Flow** (afy)	**Total Flow** (afy)	**Ag Rate** ($/AF)	**Non-Ag Rate** ($/AF)	**Revenue** ($/year)	**Cash Flow** ($/year)
2004	-	-	-	$46,000	**$46,000**	58	711	$25	$100	$66,750	$20,750
2005	$278,000	-	-	$58,000	**$336,000**	486	1139	$31	$125	$96,676	-$239,325
2006	$278,000	-	-	$58,000	**$336,000**	913	1566	$39	$156	$137,475	-$198,525
2007	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	1800	$40	$159	$177,419	-$1,260,581
2008	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	2034	$41	$162	$218,905	-$1,219,095
2009	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	2267	$41	$166	$261,980	-$1,176,020
2010	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	2501	$42	$169	$306,691	-$1,131,309
2011	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	2663	$43	$172	$340,727	-$1,476,273
2012	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	2825	$44	$176	$376,002	-$1,440,998
2013	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	2987	$45	$179	$412,552	-$1,404,448
2014	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$46	$183	$450,413	-$1,366,587
2015	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$47	$186	$459,421	-$1,357,579
2016	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$48	$190	$468,609	-$1,348,391
2017	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$48	$194	$477,982	-$1,339,018
2018	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$49	$198	$487,541	-$1,329,459
2019	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$50	$202	$497,292	-$1,319,708
2020	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$51	$206	$507,238	-$1,309,762
2021	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$52	$210	$517,383	-$1,299,617
2022	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$54	$214	$527,730	-$1,289,270
2023	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$55	$218	$538,285	-$1,278,715
2024	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$56	$223	$549,051	-$1,267,949
2025	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$57	$227	$560,032	-$1,256,968
2026	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$58	$232	$571,232	-$1,245,768
2027	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$59	$236	$582,657	-$1,234,343
2028	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$60	$241	$594,310	-$1,222,690
2029	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$61	$246	$606,196	-$1,210,804
2030	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$63	$251	$618,320	-$1,198,680
2031	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$64	$256	$630,687	-$1,186,313
2032	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$65	$261	$643,300	-$1,173,700
2033	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$67	$266	$656,166	-$1,160,834
2034	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$68	$272	$669,290	-$1,147,710
2035	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$69	$277	$682,676	-$1,134,324
2036	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$71	$283	$696,329	-$1,120,671
2037	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$72	$288	$710,256	-$1,106,744
2038	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$73	$294	$724,461	-$1,092,539
2039	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$75	$300	$738,950	-$1,078,050
2040	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$76	$306	$753,729	-$1,063,271
2041	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$78	$312	$768,804	-$1,048,196
2042	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$80	$318	$784,180	-$1,032,820
2043	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$81	$325	$799,863	-$1,017,137
2044	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$83	$331	$815,860	-$1,001,140
2045	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$84	$338	$832,178	-$984,822
2046	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$86	$344	$848,821	-$968,179
2047	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$88	$351	$865,798	-$951,202
2048	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$90	$358	$883,114	-$933,886
2049	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$91	$366	$900,776	-$916,224
2050	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$93	$373	$918,791	-$898,209
2051	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$95	$380	$937,167	-$879,833
2052	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$97	$388	$955,911	-$861,089
2053	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$99	$396	$975,029	-$841,971
2054	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$101	$404	$994,529	-$822,471
2055	-	$1,028,000	$349,000	$162,000	**$1,539,000**	913	3149	$103	$412	$1,014,420	-$524,580
2056	-	$1,028,000	$349,000	$162,000	**$1,539,000**	913	3149	$105	$420	$1,034,708	-$504,292
2057	-	-	$349,000	$162,000	**$511,000**	913	3149	$107	$428	$1,055,403	$544,403
2058	-	-	$349,000	$162,000	**$511,000**	913	3149	$109	$437	$1,076,511	$565,511
2059	-	-	$349,000	$162,000	**$511,000**	913	3149	$111	$446	$1,098,041	$587,041
2060	-	-	$349,000	$162,000	**$511,000**	913	3149	$114	$454	$1,120,002	$609,002
2061	-	-	-	$162,000	**$162,000**	913	3149	$116	$464	$1,142,402	$980,402
2062	-	-	-	$162,000	**$162,000**	913	3149	$118	$473	$1,165,250	$1,003,250

Notes:
1) The cash flow analysis is intended as an example of the benefits of the phased implementation of project costs.
2) Recycled water rates are established for 2004, 2005, and 2006. Increased rates beyond 2006 were estimated at 2% annually for purposes of this example.
3) Each CIP phase was assumed to increase flows linearly until meeting full estimated annual demand at the end of construction.